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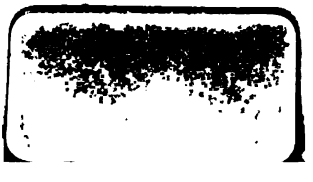

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THE EXECUTIVE DOCUMENTS

PRINTED BY ORDER OF

THE SENATE OF THE UNITED STATES

FOR THE

SECOND SESSION OF THE FORTY-SECOND CONGRESS.

1871-'72.

IN THREE VOLUMES.

Volume 1 contains Nos. 1 to 35, inclusive, except No. 6.
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LETTER

FROM

THE SECRETARY OF THE TREASURY,

COMMUNICATING,

In compliance with resolution of the Senate of the 19th instant, the report of the supervising surgeon of the United States marine hospital service for the six months ending December 31, 1871.

FEBRUARY 21, 1872.—Ordered to lie on the table and be printed.

TREASURY DEPARTMENT,
February 21, 1872.

SIR: In compliance with a resolution of the Senate of the United States, I have the honor to transmit herewith the report of the supervising surgeon of the United States marine hospital service, showing the operations of said service during the six months ending December 31, 1871, as compared with the corresponding six months of 1870.

I am, very respectfully,

GEO. S. BOUTWELL,
Secretary.

Hon. SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

DIVISION OF UNITED STATES MARINE HOSPITAL SERVICE,
Treasury Department, January 31, 1872.

SIR: I have the honor to submit herewith a comparative statement of the operations of the United States marine hospital service for the six months ending December 31, 1871, and the six months ending December 31, 1870, showing the number of days of hospital relief and the amount of expenditures incurred for the care and treatment of sick and disabled seamen; also the amount of hospital tax collected during the same periods.

The reduction of the expenditures during the six months ending December 31, 1871, over the six months ending December 31, 1870, amounts in the aggregate to over $40,000, which saves 17 per cent. to the fund.

The amount of hospital tax collected during the last six months of 1871 is 10 per cent. greater than the amount collected during the corresponding six months of 1870 under the operation of the same law.

I am, sir, very respectfully, your obedient servant,

JNO. M. WOODWORTH,
Supervising Surgeon U. S. Marine Hospital Service.

The Hon. SECRETARY OF THE TREASURY.

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Number of patients in hospital June 30, 1870, *and June* 30, 1871; *also, number admitted, discharged, died, days of relief, cost per diem for each patient, total amount of expenditures, and amount of hospital tax collected during the six months ending December* 31, 1870, *and December* 31, 1871.

Location of hospitals.	1870.								1871.							
	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.
MAINE.																
Bangor	2	33	28	2	1,220	$0 67	$815 67	$437 43	5	12	11	....	465	$0 79	$334 20	$597 39
Bath	.....	3	2	1	87	86	74 98	307 19	.....	2	.....	....	85	1 00	85 00	635 54
Belfast	.....	11	10	....	391	76	309 00	236 03	.....	8	8	2	349	1 01	352 50	454 59
Castine	.....	.....	.....	....	.....	.....	.....	382 55	.....	1	1	....	60	29	17 14	650 12
Eastport	.....	5	5	....	154	70	109 79	742 50	.....	.....	.....	....	.....	.....	.....	948 21
Ellsworth	.....	.....	.....	....	.....	.....	.....	370 05	.....	.....	.....	....	40	.....	75 50	458 26
Kennebunk	.....	.....	.....	....	.....	.....	.....	14 80	.....	.....	.....	....	.....	.....	.....	46 52
Machias	.....	.....	.....	....	.....	.....	.....	521 44	.....	.....	.....	....	.....	.....	.....	658 44
Portland	12	79	69	4	2,274	1 28	2,912 84	1,319 19	9	85	74	....	1,799	1 62	2,922 12	1,338 01
Saco	.....	.....	.....	....	.....	.....	.....	45 25	.....	.....	.....	....	.....	.....	.....	.....
Waldoborough	1	25	17	....	984	50	492 67	576 47	1	9	6	1	300	50	151 00	1,046 67
Wiscasset	.....	.....	.....	....	.....	.....	.....	43 07	.....	.....	.....	....	.....	.....	.....	120 62
York	.....	.....	.....	....	.....	.....	.....	6 00	.....	.....	.....	....	.....	.....	.....	3 60
Total	15	156	131	7	5,110	.....	4,714 95	5,001 97	15	113	100	3	3,098	.....	3,937 46	6,957 97
NEW HAMPSHIRE.																
Portsmouth	.....	4	3	....	168	52	87 00	72 83	2	5	9	....	280	1 15	322 29	138 90
VERMONT.																
Burlington	1	5	3	....	90	79	71 46	77 47	.....	1	1	....	31	79	24 58	122 68
MASSACHUSETTS.																
Boston	58	507	442	22	14,301	1 63	23,351 93	5,670 65	68	529	481	24	13,408	1 28	17,194 17	7,721 04
Barnstable	1	24	19	2	734	1 23	903 95	391 40	15	79	71	3	3,290	1 02	3,357 00	500 53
Edgartown	7	33	37	3	2,154	87	1,879 42	56 24	.....	46	30	3	2,375	88	2,079 94	137 52
Fall River	.....	.....	.....	....	.....	.....	.....	440 58	.....	.....	.....	....	.....	.....	.....	496 72
Gloucester	.....	.....	.....	....	.....	.....	.....	164 72	.....	.....	.....	....	.....	.....	.....	270 66
Marblehead	.....	.....	.....	....	.....	.....	.....	23 40	.....	.....	.....	....	.....	.....	.....	33 15
Newburyport	.....	.....	.....	....	.....	.....	.....	145 54	.....	.....	.....	....	.....	.....	.....	106 57
Nantucket	.....	.....	.....	....	.....	.....	.....	34 44	.....	.....	.....	....	.....	.....	.....	82 96
New Bedford	.....	1	.....	....	.....	.....	115 87	357 36	.....	.....	.....	....	.....	.....	.....	550 63
Plymouth	.....	.....	.....	....	.....	.....	.....	14 05	.....	.....	.....	....	.....	.....	.....	30 40
Salem	.....	.....	.....	....	.....	.....	.....	144 92	.....	.....	.....	....	.....	.....	.....	151 84
Total	66	565	498	27	17,189	.....	26,251 17	7,423 30	83	654	592	30	19,073	.....	22,631 11	10,112 02

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RHODE ISLAND.																	
Bristol								17 54									40 21
Newport								387 98		3	1	1	62	1 00	62 80		402 62
Providence		17	12		587	95	559 46	1,123 84	2	28	22	3	543	1 16	528 60		1,476 79
Total		17	12		587		559 46	1,529 36	2	31	23	4	605		691 40		1,919 62
CONNECTICUT.																	
Bridgeport								409 68									444 10
Middletown		7	6		275	74	203 38	712 23		3	1	1	74	70	58 84		839 75
New Haven	3	24	18	2	857	1 02	872 64	775 49	3	17	11	1	492	1 02	500 00		780 63
New London		19	19		144	66	95 18	535 88		5	4		163	90	147 14		725 77
Stonington								131 13									160 33
Total	3	50	43	2	1,276		1,171 20	2,564 41	3	25	16	2	729		705 98		2,940 58
NEW YORK.																	
Albany								1,498 40									1,150 88
Buffalo	24	227	223	4	9,606	75	7,215 69	577 36	23	120	125		3,889	72	2,784 75		810 40
Cape Vincent		1	1		56		46 40	74 00		1		1	23		24 04		63 02
New York	156	1,086	965	42	34,647	1 04	36,133 27	22,944 10	1 57	576	622	27	20,709	1 02	21,202 73		25,237 36
Niagara								8 45									7 69
Oswego	4	34	34	2	1,200	1 37	1,642 56	231 30	2	24	25		620	1 23	760 79		298 38
Ogdensburgh								48 49									64 13
Plattsburgh		3	3		70	79	55 05	985 60		2	3		90	69	62 09		336 20
Rochester								295 71									
Sag Harbor	1	5	5		329	76	248 65	245 65	1	1	1		10	65	6 50		210 74
Total	185	1,356	1,231	48	45,908		45,341 62	26,909 06	183	724	776	28	25,341		24,840 90		28,187 80
NEW JERSEY.																	
Bridgetown								974 30									1,102 34
Bargaintown								403 80									540 30
Lamberton								320 80									207 68
Newark								335 95									486 96
Perth Amboy								1,257 43									1,678 50
Tuckerton		6	6		260	1 01	262 60	288 55		9	5	2	336	1 00	336 00		368 53
Total		6	6		260		262 60	2,580 83		9	5	2	336		336 00		4,384 31
PENNSYLVANIA.																	
Erie		7	6		230	89	211 67	1,706 90		9	8	1	5		40 00		89 07
Philadelphia	14	129	104	6	3,980	94	3,729 33	7,797 42	35	228	208	10	2,946	1 03	3,026 00		8,187 40
Pittsburgh	10	57	40	3	2,215	1 48	3,279 64	1,525 17	7	40	41		1,153	2 34	2,701 45		1,764 24
Total	24	193	150	9	6,434		7,220 64	11,029 49	42	277	257	11	4,104		5,767 45		10,040 71
DELAWARE.																	
Wilmington		3	3		145	97	141 00	758 66	1	2	3		91	1 02	93 00		889 51

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Number of patients in hospital June 30, 1870, *and June* 30, 1871; *also, number admitted, discharged, died, days of relief, cost per diem for each patient, total amount of expenditures, and amount of hospital tax collected during the six months ending December* 31, 1870, *and December* 31, 1871.

Location of hospitals.	1870.								1871.							
	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.
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Bath	.....	3	2	1	87	86	74 98	307 19	.....	2	.....	....	85	1 00	85 00	635 54
Belfast	.....	11	10	....	391	76	309 00	236 03	.....	8	8	2	349	1 01	352 50	454 59
Castine	.....	.....	.....	....	.....	.....	.....	382 55	.....	1	1	....	60	29	17 14	650 12
Eastport	.....	5	5	....	154	70	109 79	742 50	.....	.....	.....	....	.....	.....	.....	948 21
Ellsworth	.....	.....	.....	....	.....	.....	.....	370 05	.....	.....	.....	....	40	.....	75 50	458 26
Kennebunk	.....	.....	.....	....	.....	.....	.....	14 80	.....	.....	.....	....	.....	.....	.....	46 52
Machias	.....	.....	.....	....	.....	.....	.....	521 44	.....	.....	.....	....	.....	.....	.....	658 44
Portland	12	79	69	4	2,274	1 28	2,912 84	1,319 19	9	85	74	....	1,799	1 62	2,922 12	1,338 01
Saco	.....	.....	.....	....	.....	.....	.....	45 25	.....	.....	.....	....	.....	.....	.....	.....
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Wiscasset	.....	.....	.....	....	.....	.....	.....	43 07	.....	.....	.....	....	.....	.....	.....	120 69
York	.....	.....	.....	....	.....	.....	.....	6 00	.....	.....	.....	....	.....	.....	.....	3 60
Total	15	156	131	7	5,110	.....	4,714 95	5,001 97	15	113	100	3	3,098	.....	3,937 46	6,957 97
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Portsmouth	.....	4	3	....	168	52	87 00	72 83	2	5	9	....	220	1 15	322 29	138 90
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Newburyport	.....	.....	.....	....	.....	.....	.....	145 54	.....	.....	.....	....	.....	.....	.....	106 57
Nantucket	.....	.....	.....	....	.....	.....	.....	34 44	.....	.....	.....	....	.....	.....	.....	82 96
New Bedford	.....	1	.....	....	.....	.....	115 87	357 36	.....	.....	.....	....	.....	.....	.....	560 63
Plymouth	.....	.....	.....	....	.....	.....	.....	14 05	.....	.....	.....	....	.....	.....	.....	30 40
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Ogdensburgh								48 49								64 13
Plattsburgh		3	3		70	79	55 05	985 60		2	3		90	69	62 09	336 20
Rochester								295 71								
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Newark								335 95								486 96
Perth Amboy								1,257 43								1,678 50
Tuckerton		6	6		260	1 01	262 60	288 55		9	5	2	336	1 00	336 00	368 53
Total		6	6		260		262 60	2,580 83		9	5	2	336		336 00	4,384 31
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Philadelphia	14	129	104	6	3,980	94	3,729 33	7,797 42	35	228	208	10	2,946	1 03	3,026 00	8,187 40
Pittsburgh	10	57	40	3	2,215	1 48	3,279 64	1,525 17	7	40	41		1,153	2 34	2,701 45	1,764 24
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Wilmington		3	3		145	97	141 00	758 66	1	2	3		91	1 02	93 00	889 51

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Number of patients in hospital June 30, 1870, and June 30, 1871; also, number admitted, &c.—Continued.

Location of hospitals.	1870.								1871.							
	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.
MARYLAND.																
Annapolis								$247 85								$254 68
Baltimore	16	233	199	6	6,697	$0 49	$3,272 71	9,152 30	25	227	195	10	6,224	$0 41	$2,552 25	7,285 76
Crisfield								3,430 00								3,669 71
Town Creek								135 20								196 40
Total	16	233	199	6	6,697	.....	3,272 71	12,965 25	25	227	195	10	6,224	.....	2,552 25	11,406 55
DISTRICT OF COLUMBIA.																
Georgetown	4	37	30	2	1,337	72	964 34	829 18	14	56	58	....	2,122	71	1,509 78	916 44
VIRGINIA.																
Alexandria								519 98								329 67
Eastville								824 00								1,565 38
Norfolk	22	149	122	9	5,970	1 01	6,035 00	1,587 38	19	155	130	12	5,771	1 01	5,826 00	1,646 02
Petersburgh								97 81								91 49
Richmond		16	14	1	325	1 04	338 35	112 43	1	23	17	2	867	1 02	880 28	397 93
Tappahannock								128 59								176 64
Yorktown								401 30								442 07
Total	22	165	136	10	6,295	.....	6,373 35	3,671 49	20	178	147	14	6,638	.....	6,706 28	4,649 20
WEST VIRGINIA.																
Parkersburgh																555 00
Wheeling	2	2	3	....	237	92	219 17	638 66	3	7	8	2	359	1 03	371 06	747 31
Total	2	2	3	....	237	.....	219 17	638 66	3	7	8	2	359	.....	371 06	1,302 31
NORTH CAROLINA.																
Beaufort	.....	2	1	1	69	98	67 43	209 75	.....	3	3	....	52	97	50 51	308 43
Edenton								226 75	.....	1	1	....	14	50	7 00	286 79
New Berne	1	17	16	....	660	1 28	843 91	386 51	1	9	9	....	291	1 87	543 37	391 48
Wilmington	3	26	20	2	920	1 17	1,077 20	361 61	4	28	27	1	885	1 17	1,037 76	390 42
Total	4	45	37	3	1,049	.....	1,988 54	1,184 62	5	41	40	1	1,242	.....	1,638 64	1,377 12

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SOUTH CAROLINA.																
Beaufort								81 44								35 73
Charleston	5	101	86	9	2,045	77	1,572 55	914 36	8	69	60	2	1,649	76	1,260 56	1,086 69
Georgetown		6	6		30	1 50	45 00	90 46								75 04
Total	5	107	92	2	2,075		1,617 55	1,086 26	8	69	60	2	1,649		1,260 56	1,197 46
GEORGIA.																
Brunswick								267 76								109 32
Savannah	19	268	239	5	8,524	1 02	8,692 06	1,478 10	35	197	183	8	8,652	84	7,248 60	2,044 23
St. Mary's								115 54								34 14
Total	19	268	239	5	8,524		8,692 06	1,861 40	35	197	183	8	8,652		7,248 60	2,187 69
FLORIDA.																
Apalachicola		13	12	1	200	1 00	200 27	402 87	3	3	4		112	1 01	112 70	139 54
Cedar Keys								122 90								61 08
Fernandina		18	18		100	1 39	139 18	167 70		1	1		7	1 57	10 96	320 26
Jacksonville		2	2		10	1 00	10 00	164 61		7	6	1	118	1 72	203 27	202 33
Key West	7	58	58	4	1,094	3 69	4,032 98	555 53	2	57	39	3	902	4 85	4,370 83	1,067 70
Pensacola	3	65	59	1	1,420	99	1,402 36	494 11	4	66	65		1,370	1 26	1,719 60	507 53
St. Augustine								17 70								59
Total	10	156	149	6	2,824		5,784 79	1,925 42	9	134	115	4	2,509		6,417 36	2,299 03
ALABAMA.																
Mobile	35	345	339	9	10,878	1 00	10,926 20	1,594 05	53	389	363	10	16,015	1 00	16,063 00	1,849 34
MISSISSIPPI.																
Natchez																10 20
Shieldsborough								116 40								175 60
Vicksburgh	4	6	10		155	1 00	155 00	208 05	2	19	21		221		221 00	16 00
Total	4	6	10		155		155 00	318 45	2	19	21		221		221 00	201 80
LOUISIANA.																
New Orleans	58	447	367	40	8,245	1 18	9,747 69	8,913 91	54	506	421	19	13,536		13,638 00	10,470 97
TEXAS.																
Brownsville	4	1	1		16	72	11 54	36 25	2	6	6		313	94	295 73	202 12
Corpus Christi								42 74								12 64
Galveston	25	219	209	11	5,643	1 01	5,709 00	1,583 41	30	228	220	9	5,371	89	4,793 89	1,537 29
Indianola		23	26		404	1 03	418 09	163 47		13	11	2	389	1 55	603 50	319 24
Total	29	243	236	11	6,063		6,138 63	1,825 87	32	247	237	11	6,073		5,693 12	2,071 29

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Number of patients in hospital June 30, 1870, and June 30, 1871; also, number admitted, &c.—Continued.

Location of hospitals.	1870.								1871.							
	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.
TENNESSEE.																
Memphis	10	218	175	23	3,243	$1 05	$3,415 50	$715 40	11	136	111	8	2,044	$1 02	$2,104 60	$741 10
Nashville	.....	.....	.....	.....	.....	.....	.....	208 40	6	1	6	....	190	90	171 00	215 30
Total	10	218	175	23	3,243	.....	3,415 50	923 80	17	137	117	8	2,234	.....	2,275 00	956 40
KENTUCKY.																
Louisville	32	255	210	20	9,416	97	9,114 69	999 12	51	249	225	7	12,232	89	10,836 39	1,679 56
Paducah	.....	.....	.....	.....	.....	.....	.....	158 93	.....	.....	.....	.....	.....	.....	.....	20 00
Total	32	255	210	20	9,416	.....	9,114 69	1,158 05	51	249	225	7	12,232	.....	10,836 39	1,699 56
OHIO.																
Cleveland	11	169	149	....	4,279	90	3,848 97	1,046 30	23	154	146	2	3,943	82	3,227 25	1,117 52
Cincinnati	33	203	169	2	6,933	65	4,516 77	1,661 70	41	202	183	9	7,660	65	4,996 97	1,725 90
Sandusky	.....	.....	.....	.....	.....	.....	.....	212 65	.....	.....	.....	.....	.....	.....	.....	229 95
Toledo	.....	2	2	....	83	72	60 00	138 60	.....	.....	.....	.....	.....	.....	.....	390 42
Total	44	374	320	2	11,295	.....	8,425 74	3,059 25	64	356	329	11	11,603	.....	8,224 22	3,463 79
INDIANA.																
Evansville	8	80	68	2	2,076	76	1,577 50	396 60	12	69	68	....	2,306	77	1,765 39	1,093 45
ILLINOIS.																
Chicago	35	438	415	8	9,214	1 07	9,874 38	1,384 42	40	377	338	7	8,264	78	6,446 29	1,516 46
Cairo	14	180	146	8	5,213	1 00	5,261 00	193 28	31	211	191	4	5,974	1 01	6,019 69	104 55
Galena	.....	.....	.....	.....	.....	.....	.....	286 55	.....	1	1	....	16	94	15 00	556 83
Quincy	.....	.....	.....	.....	.....	.....	.....	155 05	.....	.....	.....	.....	.....	.....	.....	65 10
Total	49	618	561	16	14,427	.....	15,135 38	2,019 30	71	589	530	11	14,234	.....	12,480 98	2,242 94
MICHIGAN.																
Detroit	26	204	198	5	4,895	96	4,680 20	1,633 68	16	199	182	2	4,673	77	3,587 83	1,890 50
Grand Haven	.....	6	6	....	213	1 70	361 96	377 42	.....	.....	.....	.....	.....	.....	.....	886 52

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Marquette	9	16	16	....	254	1 20	305 65	62 03	1	19	18	1	513	1 26	647 25	152 26
Port Huron	....	....	....	....	....	....	....	511 48	....	....	....	....	....	....	....	690 71
Total	28	286	290	5	5, 362	.....	5, 347 81	2, 584 61	17	218	200	3	5, 186	.....	4, 235 08	3, 609 39
WISCONSIN.																
Milwaukee	13	99	97	....	3, 230	70	2, 162 52	1, 006 28	8	100	74	1	3, 390	72	2, 435 15	631 60
MISSOURI.																
St. Louis	42	318	282	24	9, 742	1 03	10, 019 31	2, 824 32	32	255	239	10	7, 748	.....	7, 748 27	4, 861 73
St. Joseph	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	88 77
Total	42	318	282	24	9, 742	.....	10, 019 31	2, 824 32	32	255	239	10	7, 748	.....	7, 748 27	4, 950 50
IOWA.																
Burlington	....	....	....	....	....	....	....	22 60	....	....	....	....	....	....	....	....
Dubuque	....	8	8	....	297	97	288 79	119 30	4	36	40	...	1, 108	98	1, 086 39	49 40
Keokuk	....	1	1	....	48	1 00	48 00	.....	.....	2	2	....	46	.....	46 00	.....
Total	.....	9	9	....	345	.....	336 79	141 90	4	38	42	....	1, 154	.....	1, 132 39	49 40
MINNESOTA.																
Pembina	2	16	16	1	775	82	634 16	1, 069 50	12	15	24	1	894	91	813 13	691 20
NEBRASKA.																
Omaha	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	126 82
CALIFORNIA.																
San Francisco	102	567	527	8	26, 593	1 16	30, 847 88	13, 235 20	79	248	241	7	15, 165	1 03	15, 596 38	11, 512 50
OREGON.																
Astoria	2	24	24	....	651	1 46	948 59	435 52	3	15	13	1	584	1 23	720 84	325 52
ALASKA TERRITORY.																
Sitka	....	....	....	....	....	....	....	612 96	....	....	....	....	....	....	....	124 68
WASHINGTON TERRITORY.																
Port Townsend	20	84	71	4	4, 722	1 16	5, 492 03	1, 106 68	17	79	63	....	4, 176	1 00	4, 176 00	1, 846 20

RECAPITULATION.

Maine	15	156	131	7	5, 110	.....	4, 714 95	5, 001 97	15	113	100	3	3 098	.....	3, 937 46	6, 957 97
New Hampshire	....	4	3	....	168	.....	87 00	72 83	2	5	9	....	280	.....	322 29	138 90
Vermont	1	5	3	....	90	.....	71 46	77 47	.....	1	1	...	31	.....	24 58	122 68
Massachusetts	66	565	498	27	17, 189	.....	26, 251 17	7, 423 30	83	654	582	30	19, 073	.....	22, 631 11	10, 112 02
Rhode Island	.....	17	12	....	587	.....	559 46	1, 529 36	2	31	23	4	605	.....	691 40	1, 919 62

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Number of patients in hospital June 30, 1870, and June 30, 1871; also number admitted, &c.—Continued.

RECAPITULATION—Continued.

Location of hospitals.	1870.								1871.							
	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.	In hospital June 30.	Admitted.	Discharged.	Died.	Days of relief.	Cost per diem for each man.	Total expenditures incurred.	Hospital tax collected.
Connecticut	3	50	43	2	1,276	.....	$1,171 20	$2,564 41	3	25	16	2	729	.....	$705 98	$2,940 58
New York	185	1,356	1,231	48	45,908	.....	45,341 62	26,909 06	183	724	776	28	25,341	.....	24,840 90	28,187 80
New Jersey	.....	6	6	....	260	.....	262 60	3,580 83	.....	9	5	2	336	.....	336 00	4,384 31
Pennsylvania	24	193	150	9	6,444	.....	7,220 64	11,029 49	42	277	257	11	4,104	.....	5,767 45	10,040 71
Delaware	.....	3	3	....	145	.....	141 00	758 66	1	2	3	....	91	.....	93 00	889 51
Maryland	16	233	199	6	6,697	.....	3,272 71	12,965 25	25	227	195	10	6,224	.....	2,552 25	11,406 55
District of Columbia	4	37	30	2	1,337	.....	964 34	829 18	14	56	58	....	2,122	.....	1,509 78	916 44
Virginia	22	165	136	10	6,295	.....	6,373 35	3,671 49	20	178	147	14	6,638	.....	6,706 28	4,649 20
West Virginia	2	2	3	....	237	.....	219 17	638 66	3	7	8	2	359	.....	371 06	1,302 31
North Carolina	4	45	37	3	1,649	.....	1,988 54	1,184 62	5	41	40	1	1,242	.....	1,638 64	1,377 12
South Carolina	5	107	92	2	2,075	.....	1,617 55	1,086 26	8	69	60	2	1,649	.....	1,260 56	1,197 46
Georgia	19	268	239	5	8,524	.....	8,692 06	1,861 40	35	197	183	8	8,652	.....	7,248 60	2,178 69
Florida	10	156	149	6	2,824	.....	5,784 79	1,925 42	9	134	115	4	2,509	.....	6,417 36	2,299 03
Alabama	35	345	339	9	10,878	.....	10,926 20	1,594 05	53	389	363	10	16,015	.....	16,063 00	1,849 34
Mississippi	4	6	10	....	155	.....	155 00	318 45	2	19	21	....	221	.....	221 00	201 80
Louisiana	58	447	367	40	8,245	.....	9,747 69	8,913 91	54	506	421	19	13,536	.....	13,638 00	10,470 97
Texas	29	243	236	11	6,063	.....	6,138 63	1,825 87	32	247	237	11	6,073	.....	5,693 12	2,071 29
Tennessee	10	218	175	23	3,243	.....	3,415 50	923 80	17	137	117	8	2,234	.....	2,275 00	956 40
Kentucky	32	255	210	20	9,416	.....	9,114 69	1,158 05	51	249	225	7	12,232	.....	10,836 39	1,699 56
Ohio	44	374	320	2	11,295	.....	8,425 74	3,059 25	64	356	329	11	11,603	.....	8,224 22	3,463 79
Indiana	8	80	68	2	2,076	.....	1,577 50	396 60	12	69	68	....	2,306	.....	1,765 39	1,093 45
Illinois	49	618	561	16	14,427	.....	15,135 38	2,019 30	71	589	530	11	14,254	.....	12,480 98	2,242 94
Michigan	28	226	220	5	5,362	.....	5,347 81	2,584 61	17	218	200	3	5,186	.....	4,235 08	3,601 39
Wisconsin	13	99	97	....	3,230	.....	2,162 52	1,096 28	8	100	74	1	3,390	.....	2,435 15	631 60
Missouri	42	318	282	24	9,742	.....	10,019 31	2,824 32	32	255	239	10	8,748	.....	7,748 27	4,950 50
Iowa	.....	9	9	....	345	.....	336 79	141 90	4	38	42	....	1,154	.....	1,132 39	49 40
Minnesota	2	16	16	1	775	.....	634 16	1,069 50	12	15	24	1	894	.....	813 13	691 20
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	126 82
California	102	567	527	8	26,593	.....	30,847 88	13,235 20	79	248	241	7	15,165	.....	15,596 38	11,512 50
Oregon	2	24	24	....	651	.....	948 59	435 58	3	15	13	1	584	.....	720 84	325 52
Alaska Territory	.....	.....	.....	.....	.....	.....	.....	612 76	.....	.....	.....	.....	.....	.....	.....	124 68
Washington Territory	20	84	71	4	4,722	.....	5,492 05	1,106 68	17	79	63	....	4,176	.....	4,176 00	1,846 20
Total	854	7,297	6,497	292	224,023	.....	235,159 05	126,427 77	978	6,279	5,785	221	199,854	.....	195,109 04	138,947 23

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Statement of the operations of the Marine Hospital Service for the six months ending December 31, 1871, as compared with the six months ending December 31, 1870.

SUMMARY.

	1870.	1871.	Difference.
Number of patients treated in hospital	8,151	7,257	
Number of days of hospital relief	224,024	199,854	
Average number of patients maintained daily	1,231	1,098	
Percentage of deaths	3¼ per cent.	3 per cent.	
Expenditures incurred for care and treatment of sick and disabled seamen	$235,159 05	$195,109 04	
Cost per diem for each patient	$1 05	$0 97.6	
Diminished expenditures during the six months ending December 31, 1871			$40,050 01
Diminished percentage of expenditures during the six months ending December 31, 1871, compared with the six months ending December 31, 1870			17 per cent.
Amount of hospital tax collected	*$126,427 77	*$138,947 23	
Increase of hospital tax collected during the six months ending December 31, 1871			$12,519 46
Number of ports where hospital relief was furnished	75	75	
Number of ports where hospital tax was collected	118	119	

*These figures represent the minor portion of the tax collected each year, the major amount being collected during the last six months of each fiscal year.

S. Ex. 36——2

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LETTER

FROM

THE POSTMASTER GENERAL,

TRANSMITTING,

In compliance with a resolution of the Senate of January 30, 1872, information relating to mail service rendered in Louisiana.

FEBRUARY 26, 1872.—Referred to the Committee on Post-Offices and Post-Roads and ordered to be printed.

POST-OFFICE DEPARTMENT,
Washington, D. C., February, 1872.

SIR: I have had the honor to receive copy of a resolution adopted by the Senate on the 30th ultimo, directing "the Postmaster General to transmit to the Senate any information on file in his Department showing the names of persons claiming compensation for mail service rendered in the State of Louisiana prior to the year eighteen hundred and sixty-one, together with the amount claimed by each."

There being no class of claims answering to those mentioned in the resolution now before the Department, that is, claims for mail service rendered in Louisiana *prior* to 1861, it is presumed reference is made and information desired in regard to unsettled balances for service performed in 1861, which service was suspended by a general order of Postmaster General Blair, acting under the requirements of the act of Congress approved February 28, 1861.

The order named was dated May 27, 1861, and directed that "all postal service" in ten of the Southern States, including Louisiana, be "suspended from and after the 31st inst."

In compliance with a request made to him, the Auditor of the Treasury for the Post-Office Department has furnished a list of the contractors in Louisiana, whose accounts to May 31, 1861, are unsettled, showing the amounts due each to March 31 of that year, to which is added the amount apparently due to the 31st May following, and the totals.

The letter of the Auditor, and the list alluded to, are herewith submitted.

Very respectfully, your obedient servant,

JNO. A. J. CRESWELL,
Postmaster General.

Hon. SCHUYLER COLFAX,
President of the Senate.

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OFFICE OF THE AUDITOR OF THE TREASURY
FOR THE POST-OFFICE DEPARTMENT,
Washington, February 21, 1872.

SIR: In compliance with your request, you are herewith furnished a list of the mail contractors in Louisiana whose accounts were unsettled May 31, 1861, in accordance with resolution of the Senate adopted January 30, 1872, together with the amounts actually due to March 31, 1861, and apparently due to May 31, of same year.

I have the honor to be, very respectfully,

J. J. MARTIN,
Auditor.

Hon. J. A. J. CRESWELL,
Postmaster General.

List of mail contractors' accounts in Louisiana remaining unsettled May 31, 1861.

Contractors.	Due to March 31, 1861.	Apparently due May 31, 1861.	Total.
Atkinson & Walker	$1,456 60	$996 28	$2,452 88
Banks, A. C	306 70	167 58	474 28
Boudro, Don Louis		134 07	134 07
Baton Rouge, Grosse-Tête and Opelousas Railroad Company	237 50	159 20	396 70
Butterworth, Isham	140 25	118 81	259 06
Brooks, Thomas	39 72	65 02	104 74
Campbell, F. L	200 00	133 34	333 34
Carruth, R. H	200 00	133 34	333 34
Carter, J. M	233 10	186 00	419 10
Cornish, J. H	396 20	266 68	662 88
Carr, W. C	484 80	340 50	825 30
Denham, J. O	458 68	308 28	766 96
Earle, H. T	352 81	183 34	536 15
Elliser, S. P	25 00	16 76	41 76
Fain, J. M		33 54	33 54
Felder, O. H	397 90	277 01	674 91
Fox, R. L	524 95	366 54	891 49
Gibson, G. W	98 25	65 84	164 09
Gillespie, J. H	266 11	181 50	447 61
Gooch, C. P	65 00	43 34	108 34
Geddings, Alfred	62 50	41 68	104 18
Graves, J. W	497 50	231 68	729 18
Grant, John	555 92	416 68	972 60
Holden, B. F	579 04	541 68	1,120 72
Huey, John, jr	64 06	52 00	116 06
Huston, E. S		250 00	250 00
Holmes & Leathers		670 33	670 33
Jackson, W. F		112 50	112 50
Kirk, Joseph J. B	247 57	180 98	428 55
Knight, Charles	48 55	32 50	81 05
Kelly, W. A	145 94	97 60	243 58
Lacy, James	98 07	70 84	168 91
Landry, George		33 34	33 34
Landry, V. T	241 54	166 68	408 22
Lemoine, D		49 16	49 16
McCord, J. W	126 59	332 16	458 75
McGee & Painter	56 00	37 40	93 40
Matthews, A. M	250 00	83 34	333 34
Murphy, C. H	61 50	41 66	103 16
Monroe, James	448 89	332 16	781 05
New Orleans, Opelousas and Great Western Railroad Company	3,906 63	2,681 31	6,587 94
New Orleans, Jackson and Great Northern Railroad Company		6,971 43	6,971 43
Osborn, M. S	805 32	618 00	1,423 32
Oliver, L. D		220 82	220 82
Peyton, G. W		65 84	65 84
Phelps, R. A	147 50	98 34	245 84
Price & Foster		368 68	368 68
Pintado, N. T	27 50	18 43	45 93
Reilly, Pat	126 95	117 00	243 95
Richart, John	73 79	50 00	123 79
Rudisill, J. H		234 00	234 00
Rains & Rains	86 25	57 50	143 75
Robertson, W. A	106 25	70 84	177 09
Reilly, Mary	60 00	40 00	100 00

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List of mail contractors' accounts in Louisiana, &c.—Continued.

Contractors.	Due to March 31, 1861.	Apparently due May 31, 1861.	Total.
Seale, J. C	$118 44	$71 52	$189 96
Slocum, J. I.	189 92	131 66	321 58
Smart, L. W	250 00	166 68	416 68
Spreen, Henry	61 25	40 82	102 07
Stell, R. M	142 21	116 68	258 89
Stevens, J. H	.....	116 68	116 68
Swink, P. A	61 92	48 00	109 92
Swofford, M. M	1,762 85	1,196 52	2,959 37
Swofford, T. F	603 98	415 16	1,019 14
Taylor, W. B	.....	100 55	100 55
Ward, J. H	234 91	166 16	401 07
West, J. M	96 15	66 68	162 83
Wingfield, William	89 08	62 50	151 58
White, W. K	138 25	107 50	245 75
Wood & Davis	351 13	241 50	592 63
Womack, H. H	43 75	29 16	72 91
Wingfield, G	156 25	104 16	260 41
Total	20,007 58	22,745 46	42,752 98

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING, IN OBEDIENCE TO LAW,

Additional information, comprised in the report of Lieutenant Colonel W. F. Raynolds, regarding a recent survey of the Mississippi River, opposite the mouth of the Missouri.

FEBRUARY 26, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *February* 23, 1872.

The Secretary of War has the honor to submit to the United States Senate and House of Representatives, in further response to the provisions of the act of July 11, 1870, providing for certain public works, and in connection with an engineer report upon the Cabaret Slough in the Mississippi River, transmitted to Congress on the 1st instant, a report of Lieutenant Colonel W. F. Raynolds, Corps of Engineers, of a recent survey of the Mississippi River opposite the mouth of the Missouri.

WM. W. BELKNAP,
Secretary of War.

OFFICE WESTERN RIVER IMPROVEMENTS,
1122 *Pine Street, Saint Louis, Missouri, February* 8, 1872.

GENERAL: In compliance with your instructions of the 13th ultimo, I have had an examination made of the Mississippi River opposite the mouth of the Missouri, and I have the honor to forward herewith the report of Captain C. J. Allen, to whom the immediate charge of the examination was intrusted. The abrasion of the bank at this point has been going on for years, and there does not seem to be any new developments in regard to it at this time. The rate of progress cannot be foretold, and seems to follow no law other than that it is more rapid when the Missouri is high and the Mississippi low, for the reason that the resultant of the streams is then thrown with greater force against it.

The sketch forwarded herewith shows the shore-line as it was in 1813, (laid down from the land surveys,) in a dotted black line. The dotted red line shows where it was found by Major Merrill in 1868. The full red line is where it was found at the time of our survey in 1870, and the full black line shows it as it was on the 25th ultimo.

The bank at the end of the Madison County Railroad was partially revetted some years since, which for a time seems to have checked the

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action of the water. The revetment was intact at the time of Major Merrill's survey, but now is the pile of stone shown on the sketch at A, near the western bank, the entire channel being to the east of it. Since the river cut a channel around this revetment, the erosion has been rapid. The whole change, measured on the line of the prolongation of the Madison County Railroad since 1813, is about 2,600 feet; since 1868, Merrill's survey, 950 feet; since October, 1871, to January, 1872, 400 feet.

The large sand-bar forming the eastern portion of Mobile Island seems to have moved eastward at about the same rate as the opposite bank of the stream.

Last season the Missouri River seemed disposed to resume its old channel through Mobile Chute, and it was plain that if this could be effected the erosion of the opposite Illinois shore would be materially lessened if not checked entirely. A small amount ($25,000) was asked for, for the purpose of aiding the river, in hopes of gaining this object.

The Missouri is at present very low, yet still a small quantity of water takes the desired course through the main channel, rebounds from the right bank just above the head of the chute, and then crosses the river diagonally, showing no disposition to take the course we desire it should. It is impossible to predict what will be the condition of affairs when a rise occurs, but the present indications are that a much larger sum will be required to effect the object than was thought necessary last season. I am still of the opinion that the deflection of a large portion of the waters of the Missouri through this channel is the most desirable method of making the proposed improvement, not only because it would afford relief immediately opposite where the channels of the two streams now meet, but because it would shorten by several miles the route into the Missouri, and give us reason to hope for important favorable changes in the channel of the Mississippi, possibly as far down as the city limits.

As matters now stand, the waters of the Missouri could not probably be deflected into Mobile Chute without running out a dike from the head of Mobile Island for a distance of 1,500 feet, which would cost, at $50 per running foot, $75,000, in addition to the $25,000 estimated last season for removing the snags and other obstructions which now obstruct the channel, or, in all, $100,000.

The plan of protecting the Illinois shore, (which seems to be contemplated in your letter of instruction,) as proposed by Captain Allen, would certainly be effectual in preventing further erosion, and the cost of the work by the two methods of jettees and continuous revetments has been estimated with care, and is as nearly correct as estimates can be made for such works.

Though not contemplated in your letter of instructions, I take this occasion to call your attention to the condition of the river immediately opposite this city, as, from the frequent mention which has been made in our city papers of this point during the past two months, I think it possible that the parties who called the attention of the Bureau to this matter had this locality in view. Sketch "B," forwarded herewith, shows a section of the river immediately opposite the city, and above the site of the bridge now under construction.

During the recent intensely cold weather the ice lodged on the shoal opposite the old water-works and ferry landing, thus forcing the water toward the Illinois shore and around the head of Long Dike at U, and against the bank near the Chicago, Alton and Saint Louis Railroad, causing it to wear away very rapidly. The action has to a considerable extent diminished, but, to prevent future trouble, I understand that the city

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authorities propose the extension of Long Dike some 600 feet, so as to confine the channel to a width of about 1,600 feet, or about that of the water-way under the bridge.

The improvement of the mouth of the Missouri River should be considered as part of a general scheme for the improvement of the harbor of Saint Louis, and any plan for the latter purpose should take into view the interests of the whole city, at least as far down as the mouth of the Des Peres River, if not to include the Government reservation at Jefferson Barracks, and down to the mouth of the Meramec. To my knowledge, no general plan has ever been submitted, but when we remember the large estimates which have been submitted for different localities, and the fact that no estimates have been made for the lower half of this harbor, where improvements are even now called for, it is but too evident that a large amount will be required for the entire improvement. I am satisfied that the true interests of the Government, of commerce, and of this city, demand that an appropriation of not less than $500,000 should be made at once, and the appropriation so worded as not to confine the expenditure to any one locality, and that a board of officers, having the largest experience in this kind of duty, should be convened for the purpose of taking the whole subject into consideration, who should decide upon the best method of expending the amount appropriated, and also of making all the improvements demanded, and that, when the work is once decided on, it should be pushed to its completion with the utmost vigor.

Very respectfully,

W. F. RAYNOLDS,
Lieutenant Colonel, Corps of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. A., Washington, D. C.

1122 PINE STREET, SAINT LOUIS, MISSOURI,
February 7, 1872.

COLONEL: As directed by you, I have made an examination of the Illinois shore, opposite the mouth of the Missouri. Measurements taken show that much change has taken place since the survey made in the fall of 1870.

The current of the Missouri seems to be bearing more toward Missouri Point and the foot of Maple Island, and that of the Mississippi, after it leaves the foot of Ellis Island opposite Alton, bears strongly toward the Missouri shore, wearing away a deep concavity in the latter; thence, rebounding toward the Illinois shore, it has cut away more than one-third of Maple Island, and, finally, uniting with the current of the Missouri, the two bear with full force upon the Illinois shore in Missouri Bend.

The bend has suffered an average abrasion of 250 feet in depth upon a length of 20,000 feet, since October, 1870. In one place, at the end of the Madison County Railroad embankment, the bank has been cut away to the depth of 950 feet since 1868.

Fears have been entertained for a number of years that the river would break through its banks, and, finding its way into the valleys of Long Lake and Cahokia Creek, pass far to the east of Saint Louis, completely shutting the city off from the river.

In my report to you of the 3d of February last, upon the mouth of the Missouri, I stated that I apprehended no immediate danger to the city from this cause, and the results of my recent examinations have only confirmed the opinion then expressed. As I have already described this locality in the report referred to, it would only be a rep etition of words to describe it again.

The destruction to property from this abrasion is great, and if some protection is not afforded the banks, numbers of farms and other property will be destroyed, unless, from causes that cannot be foreseen, the action of the currents should be stayed.

A great deal has been written upon this subject and a variety of plans suggested to meet the difficulty, the majority of them based upon the idea of turning the course of the Missouri. The effects of such measures upon rivers like the Missouri and Lower Mississippi are always uncertain, and it would seem best, in my opinion, where a choice

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is left the engineer, to protect the banks wherever necessary and not interfere with the flow of the stream.

An exception, however, exists in the case in which an inclination is observed upon the part of the stream to take the course we wish it to pursue. It is well, then, to assist it. Upon this principle it was suggested, in my last report to you, to clear the obstructions from Mobile Chute. But the conditions of last year upon these rivers are not the conditions of this year. The Missouri current seems now to be bearing away from the head of Mobile Chute. A flood, however, may bring it back.

The only way that seems clear to me to effectually prevent further abrasion in Missouri Bend is, to protect the banks either by means of jettees or with a continuous revetment. The former, although cheaper at first than the latter, are open to many objections. It is necessary to carry them up high enough to protect the banks at all stages of water—in this locality as high as the banks themselves; and they should be carried out far enough, at this level, to protect the reaches of shore between them from the action of the eddies. They are, moreover, subject to heavy scour at their heads and to the injurious action of the water as it flows over them; particularly so at the junction of the shore and jettee. What ratio exists between the length of jettee and the length of bank it protects is not easily stated. I have seen it placed as high as one linear foot of jettee to five linear feet of bank. In the case of a jettee built in the Missouri River at St. Charles, it is claimed that the length of shore protected was about four times the length of jettee. It depends, mainly, upon the location of the jettee.

A continuous revetment, although more expensive, presents better chances of permanency, and would insure more thorough protection to the banks.

The difficulty of founding upon such soil as forms the beds of the Missouri and Mississippi Rivers at their junction, is well-known to all who have given the subject any study.

The usual practice for the protection and maintenance of the banks in the harbor of Saint Louis, (where the bed of the river is of the same nature as at the mouth of the Missouri,) and which has given the best results, is to build a longitudinal retaining-dike of loose stone at the foot of the scarp, and then grade and riprap the bank. This method requires a great quantity of stone, particularly where the dike is subject to scour; the stone disappears almost as rapidly as thrown in. The only way is to continue to throw on stone until the mass sinks to a firm surface, or to a point below the effect of scour.

The expense of applying this method to the bend opposite the mouth of the Missouri would be too great to warrant its adoption.

I believe that, in building a revetment at the foot of the scarp in Missouri Bend, an equally good and much more economical plan would be to sink rafts or aprons of brush, weighted down with stone; the rafts to be built upon light floating frame-work of hoop-poles, or small saplings; the stone in pieces of thirty pound weight and upward. A large quantity of brush and stone would be required. The former can be obtained within a radius of ten miles, and the quarries of Grafton, Alton, and Saint Louis can furnish the stone. Brush fascines and willow panniers, with stone, could also be used to advantage in connection with the brush-aprons.

The revetment or retaining-dike should be firmly settled, and carried up to the surface of low water. From this point the bank should be graded to a slope of 1 upon $1\frac{1}{2}$, and covered for half the distance up with a layer of 6-inch stone, placed with the rough edge down. The remaining distance to be covered with a layer of 4-inch stone, similarly placed. The top of the bank should be lightly strewn with 3-inch stone for a width of 5 or 6 feet. The stone being simply laid upon the surface will, in the event of any slight wash beneath it, settle and keep the protection good.

It is not easy to estimate the cost of the brush and stone revetment; but, after careful consideration, I would not place it lower than $15 50 per linear foot of bank to be revetted. This is independent of the grading and riprapping, or covering. It is also difficult to estimate the cost of jettees with any degree of certainty. I would place their cost at $50 per linear foot of jettee. Assuming that, if properly located, 1 linear foot will protect 4 feet of shore, we have for this method $12 50 per linear foot of bank to be protected.

If the work is undertaken, it will probably be necessary to carry it for some distance above and below the present limits of erosion. On this account, and the probability of further wear, I have estimated for the protection of 22,000 feet of bank.

If it is undertaken to revet the bank continuously, care must be taken not to allow the current to cut in behind the line of dike or revetment, as this would simply result in shifting the line of scarp.

It would be necessary to commence the work of grading and riprapping as soon as the revetment could be carried high enough to enable it to be done. The average height of bank above low water is 25 feet.

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Estimate for protection by means of jettees.

22,000 linear feet of bank, at $12 50	$275,000
Add for engineering and contingencies 15 per cent	41,250
Total	316,250

Estimate for protection of bank by means of continuous revetment, grading, &c.

22,000 linear feet of brush and stone revetment, at $15 50	$341,000 00
381,944 cubic yards of earth excavation and grading, at 30 cents	114,583 20
9,187 cubic yards of 6-inch stone covering, at $2	18,374 00
6,067 cubic yards of 4-inch stone covering, at $2	12,134 00
1,000 cubic yards of 3-inch stone for top of bank, at $2	2,000 00
	488,091 20
Add for engineering and contingencies 15 per cent	73,213 68
Total	561,304 88

It will be seen that either plan will be very expensive.

Very respectfully, your obedient servant,

CHAS. J. ALLEN,
Captain of Engineers.

Lieutenant Colonel W. F. RAYNOLDS,
U. S. Corps of Engineers, Saint Louis, Mo.

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42D CONGRESS, 2d Session. | SENATE. | Ex. DOC. No. 39.

INTERNATIONAL CONGRESS

ON THE

PREVENTION AND REPRESSION OF CRIME,

INCLUDING

PENAL AND REFORMATORY TREATMENT:

PRELIMINARY REPORT OF THE COMMISSIONER

APPOINTED BY THE PRESIDENT TO REPRESENT THE UNITED STATES IN THE CONGRESS, IN COMPLIANCE WITH A JOINT RESOLUTION OF MARCH 7, 1871.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1872.

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FORTY-SECOND CONGRESS, SECOND SESSION.

IN THE SENATE OF THE UNITED STATES,
February 26, 1872.

Referred to the Committee on the Judiciary and ordered to be printed.

FORTY-SECOND CONGRESS, SECOND SESSION.

CONGRESS OF THE UNITED STATES,
In the House of Representatives, May 17, 1872.

The following resolution, originating in the House of Representatives, May 14, 1872, has this day been concurred in by the Senate:

Resolved by the House of Representatives, (the Senate concurring,) That there be printed five thousand extra copies of the preliminary report of the Commissioner of the United States to the International Penitentiary Congress of London, with accompanying documents; one thousand copies to be for the use of the Senate, two thousand for the use of the House, and two thousand for the State Department.

Attest:

EWD. McPHERSON, *Clerk.*

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INTERNATIONAL PENITENTIARY CONGRESS.

MESSAGE FROM THE PRESIDENT OF THE UNITED STATES, COMMUNICATING THE PRELIMINARY REPORT OF THE COMMISSIONER TO THE INTERNATIONAL PENITENTIARY CONGRESS OF LONDON, IN COMPLIANCE WITH A JOINT RESOLUTION OF MARCH 7, 1871.

To the Senate of the United States:

I transmit herewith, for the consideration of the Senate, a preliminary report of Dr. E. C. Wines, appointed, under a joint resolution of Congress of the 7th of March, 1871, as commissioner of the United States to the international congress on the prevention and repression of crime, including penal and reformatory treatment.

U. S. GRANT.

WASHINGTON, *February* 23, 1872.

PRELIMINARY REPORT TO THE PRESIDENT OF THE UNITED STATES OF THE COMMISSIONER TO THE INTERNATIONAL PENITENTIARY CONGRESS OF LONDON.

WASHINGTON, D. C., *February* 15, 1872.

As Commissioner of the United States to the "International Congress on the Prevention and Repression of Crime, including Penal and Reformatory Treatment," I have the honor to submit to the President, and to ask that he will lay before Congress, the following preliminary report:

The first legislative act of the Forty-second Congress was the passage, on the 7th day of March, 1871, by a unanimous vote, of a joint resolution authorizing the President to appoint a commissioner to represent the United States in the proposed congress. The President was pleased to name the undersigned as such commissioner. The appointment was conferred nearly a year and a half in advance of the meeting of the congress—much earlier, therefore, than would have been necessary if the intention had been simply to provide for representation in the congress on the part of the Government. It was understood (although the joint resolution did not in terms embody a declaration to that effect) that my appointment included the further duty of arranging the preliminaries of the congress, and made it necessary to open communications, either personally or by correspondence, with all the civilized nations of the earth. In this view, the honorable Secretary of State kindly furnished me with a letter addressed to our diplomatic and consular representatives abroad, requesting them to afford such aid as they properly might in the prosecution of my mission.

As it would be obviously impossible for me, within the time at my command, to communicate in person with the governments of all civil-

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ized nations, I sought and obtained permission from the honorable Secretary of State to call upon the foreign ministers accredited to this Government, with a view to secure, if possible, their friendly co-operation. This was not found to be a difficult task. The ministers—I believe without exception—entered promptly and warmly into the project, and pledged such aid as they might be able to render toward its realization. Those from European countries gave me letters of personal introduction to the proper ministers in their respective cabinets, and all addressed notes to their governments explaining what was proposed, and commending it to a favorable consideration.

I sailed from New York on the 8th of July, and, returning, arrived at the same port on the 20th of November, spending thus a little more than four months in Europe, organizing the elements of the proposed international penitentiary congress. The governments with which I was able to open personal communications were those of Great Britain, France, Belgium, Netherlands, the North German Empire, Austria, Italy, and Switzerland.

The British government, without pledging itself to official representation, entertained the idea of the proposed congress with much favor, and promised co-operation in a variety of ways. With Englishmen, however, as with us, the method of voluntary action is much employed, both in the study of social problems and in the pursuit of social reforms. This characteristic was conspicuously displayed in the present case. Thus, at its annual meeting in Leeds, last October, the British Association for the Promotion of Social Science took decided action in favor of the congress; and Sir John Pakington, president of the meeting, in his closing address, gave emphatic expression to the general satisfaction occasioned (he averred) by the presence of the American commissioner among them. Thus, again, at a meeting held in London, on the 3d of November, in which several ex-cabinet officers and members of Parliament participated, a large and most respectable national committee was named, to be charged with whatever pertained to preparation for the congress in England.

From England I passed over to France. Here, by procurement of Colonel Hoffman, then in charge of the American legation, audiences were had of the ministers of foreign affairs and of the interior, MM. de Rémusat and Lambrecht. These gentlemen gave favorable entertainment to the idea of the congress; and by them I was brought into communication with M. Jaillant, supreme director of prisons for France, a gentleman of great intelligence, and intensely devoted to the problems of penitentiary reform. I was given to understand that a prison commission, created by Napoleon in 1869, would be revived and reorganized by the present government, and that it would be named by the government as the National Committee for France, and charged with the needful preparatory work in that country. That has since been done. M. de Rémusat further testified his interest in the congress and his desire to contribute to its success by procuring for me from the French Academy an invitation to read a discourse on the subject before that illustrious body; and the president of the Academy, in replying to my remarks, pledged its members to the use of their best efforts in aid of the proposed conference.

I may state here, in passing, that in my negotiations upon this subject with the different governments, three things were asked of each, viz: 1. That it would name commissioners to the congress of London. 2. That it would name a national committee for its own country. 3. That it would supply certain information relative to its prisons and prison administration.

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From France I proceeded to Belgium, and thence to Holland. In both these countries the governments had already taken the first steps toward an active participation in the congress, moved to such action by communications on the subject received from their ministers at Washington. This greatly smoothed my path and facilitated my work. There were no prejudices to be overcome, no indifference to be removed. The official judgment had been gained and the sympathy of the authorities enlisted. In one, a national committee had been named; in the other, it had been determined upon. Little remained to be done, beyond conference and suggestion. My task here was, therefore, an easy one; and the progress made since my visits has been such that preparation may be said to be well-nigh completed in the two states. Both will be fully and ably represented in London by government members and others. A difficulty, peculiar in character and of considerable magnitude, has been surmounted. In continental countries a strict line of demarkation is drawn between governments and the public at large, to this effect: that where governments associate for international purposes, private participation is excluded; and, conversely, where assemblages of private citizens are convened, governments are not accustomed to send representatives. There is reason to believe that this usage will be widely if not universally disregarded in the present instance; and that governments, as such, will name delegates of their own to the congress, while national committees will designate others. Thus, for instance, Mr. Grevelink, chief superintendent of prisons and state police for Netherlands, and a member of the national committee for that country, informs me that the minister of justice has, on the nomination of the committee, named two of its members, and will probably name a third, to represent the government in the congress at the public expense, and that, at the proper time, the committee itself will invite such others as it may deem expedient, to attend the congress as delegates at their own expense.

On my arrival at Berlin, Prince Bismarck was not at the capital. Minister Bancroft therefore put me in communication with the honorable secretary of state, who replaces him in his absence, and by that gentleman I was introduced to Count Eulenburg, minister of the interior, who is charged with the oversight of the prisons and penal administration of the empire. After listening to an explanation of the nature and objects of my mission, the minister was pleased to express, in very emphatic terms, his approval of those objects, and to promise an earnest support of the congress, and the use of his best endeavors to secure participation therein by all the different states composing the North German Union. This pledge has since been amply redeemed. Count Eulenburg, under instruction from Prince Bismarck, took effective measures to have the interest not only of Prussia, but of all the other governments of the empire, directed to the approaching congress. He called to his aid for this work a distinguished councilor in his own ministry—Herr Steinmann—who is specially occupied with the prison question. Besides charging this officer with the preparation of a report in answer to the questions submitted relative to the condition of German prisons, he directed him to place himself in communication with persons in the several states of the empire, for the forming of committees, with whom he may confer, and through whom representation in the congress of London may be secured from all the different members of the Union.

My negotiations with the Austro-Hungarian government were prior to the late change in the ministry, and while Count Beust was still prime minister and chancellor of the empire. Mr. Jay, American min-

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ister at Vienna, whose zeal in the cause of the congress has been conspicuous, though scarcely exceptional, (for all our ministers have lent prompt and willing assistance,) honored me by a personal introduction to the chancellor, with whom our interview lasted more than half an hour. Count Beust received the idea of the proposed international reunion with much favor, gave his adhesion to it without hesitation, and, the minister of justice being absent at the time, placed me in communication with Dr. Eduard Ritter Von Liszt, attorney general (the highest law officer) of the empire. This gentleman from the first manifested the deepest interest in the movement, regarding it as one of the most important and most hopeful that had been or could be proposed. The crisis through which the government has passed since the date of my visit, resulting in a change of the ministry, has delayed the action confidently anticipated at that time; but it is believed to be only a postponement, and not a declension. Mr. Jay has not forgotten the object, nor been idle; and Dr. Von Liszt informs me that the present minister of justice has the most favorable disposition, and he feels confident that, through his interest and efforts, my wishes regarding the participation of Austria will have a perfect realization.

Mr. Lanza, president of the council of ministers, and minister of the interior, having in this latter capacity charge of the penal affairs of the kingdom of Italy, entered with all his heart into what he himself has designated "this great scientifico-social movement." In my interview with him, he unhesitatingly assured me that Italy should be behind no nation of the world in the support it would give to the congress of London, and in the efforts it would put forth to insure its success. And that promise he has nobly fulfilled. He addressed an elaborate and exhaustive report upon the subject to the King, submitting to him at the same time the draught of a royal decree, which His Majesty immediately promulgated, naming twenty-one eminent citizens as a royal commission, charged with the duty of studying and proposing the solution of the more important questions offered by modern penitentiary science. This commission has a special and most important work to do for Italy; but its labors are intended at the same time to aid the congress of London, and it has formed a sub-committee of its own members to act as the national committee of Italy. It is due to Minister Lanza, as showing at once his zeal in this movement and his friendship for our country, to state that he caused the commissioner, during his sojourn at Rome, to be entertained as the guest of the Italian government.

Switzerland was the last of the European governments with which personal communication was had. Though smallest in extent and population, the Swiss Confederation has not been behind any of the European states in the zeal and earnestness with which it has accepted the idea of the congress, and labored for its realization. President Schenk, to whom Minister Rublee personally introduced me, at once pledged the co-operation of his government, and the faith thus plighted has been kept to the letter. The council of the confederation has created a national committee; has named a commissioner to the congress, reserving the right of naming others if it see occasion; has answered the question submitted; and, in short, may be said to have already all but completed the work of preparation for Switzerland.

From most of the continental governments visited reports in answer to the questions submitted have been received touching their prisons and prison administrations; and from the others I have information that similar reports are on the way, and may be expected within a few days.

The undersigned was unable, within the time to which his mission abroad was necessarily restricted, to visit and open negotiations with the

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more distant of the European governments, viz: those of Sweden and Norway, Denmark, Russia, Turkey, Greece, Spain, and Portugal. These governments have been addressed through the American ministers accredited to them.

It is perhaps a little singular, and will be interesting to the President and the American people to be informed, that the Ottoman government, of those just enumerated, has, thus far, shown most interest in the congress, and taken action in regard to it in advance of all others. The Hon. Mr. Brown, American *chargé d'affaires ad interim* at Constantinople, has brought the proposition for the congress to the notice of the Turkish government, which at once responded favorably, and will be represented in the conference. He reports the minister of police as feeling so warm an interest in the matter that he has caused the proceedings of the public meeting in London relating to it to be translated into Turkish for circulation through the empire. The journals publish leaders on the subject, and urge that the various communities—Armenian, Greek, and Mussulman—as well as the government, send delegates to the congress, claiming that the country has of late made much progress in the principles of truth and justice, as well as in intellectual culture, and that this will be a good opportunity to show to the world how great the advance has been. Our ministers to Russia, Spain, Portugal, and Sweden and Norway have, at the instance of the undersigned, brought this subject before the governments of those countries; but as yet no decision has been reported, though the hope is expressed in reference to all, that the decision, when reached, will be favorable. Minister Cramer, accredited to Denmark, writes that, owing to the failure of certain documents to reach him, he had been unable to formally address the government on the subject, but would do so as soon as fresh copies of the said papers should come to hand, and would use his best endeavors to secure favorable action. I have some knowledge of the interest in prison reform which exists to-day in Denmark, and especially of the favor in which the proposition for the international congress is held by the able and accomplished gentleman at the head of the prison administration of that country; and judging from the facts thus within my knowledge, I have little doubt that Denmark will be present and will contribute her full share toward any useful results that may be reached. Greece is the only country in Europe from which no communication whatever has been received.*

In some, at least, of the numerous British colonies scattered over the face of the earth, interesting experiments in prison discipline are going on; questions of penitentiary reform are keenly studied; and substantial progress is making in the right direction. It is a pleasure to be able to report that a number of these are likely to be represented in the congress, and some, indeed, have already appointed their delegates.

Turning from the Old World to the New, we find the prospect for a successful conference scarcely less promising. The ministers of the Spanish-speaking republics of North and South America, as also of the Empire of Brazil, have taken a strong interest in this movement from the first, and have made active exertion to promote its success in their respective countries. Mexico, Brazil, the Argentine Republic, Chili, Colombia, and other South American states have decided to take part in the congress, and some of them have already named their commissioners. Japan and Hayti will be likely to be present by their repre-

* Since the date of this report information has been received from the Hon. Mr Francis, United States minister, that the government of Greece has taken the action asked, and has named a commissioner to represent it in the congress.

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sentatives. Indeed, the strong probability is that there will be few, if any, of the civilized nations of the earth unrepresented in the approaching international congress of London, called for the study of all questions connected with the repression of crime and the reformation of criminals.

As regards the United States, little need be said. The General Government inaugurated this movement, and it is freely accorded by other nations the honor which belongs to that position. As the nation itself is to be officially represented in the congress, so, it is hoped, will be each of the States as well. The legislatures of several have already, by joint resolution, authorized the appointment of one or more commissioners. This has been done in New Hampshire, Rhode Island, Connecticut, New Jersey, Indiana, and, I think, Michigan; perhaps in some other States also. It is believed that most of the States will take similar action, and that all, or nearly all, might be induced to do so by the necessary effort to that end. The leading penal and reformatory institutions of the country, as well as their governing boards, are likely to send delegates to the congress; and so are the boards of State charities. It is believed, also, that the police organizations of our larger cities, and the more important criminal courts, will be in the conference by their representatives. It seems a thing much to be desired that the country which originated the congress should be largely represented in it; and the reverse of this would be proportionately humiliating.

I have thus endeavored to offer a truthful, though brief, sketch of the work done, and the progress made in organizing this great movement in the interest of civilization and humanity. Every day now witnesses an advance in some part of the field; every day brings fresh evidence that the movement is gaining strength, and taking on a fixed form; every day strengthens the hope of large and lasting benefits from a consummation which seems well nigh if not rather quite assured.

From the exacting nature of other duties I was unable to examine any great number of prisons and reformatories while abroad, though by great effort I managed to see between forty and fifty in the aggregate. What I have to say on these will be more fitly said in connection with the official reports on prisons, received from the governments of the countries visited; and I therefore forbear all reference to them in the present paper.

I beg to submit to the President, as a part of this report, the following documents, all of them bearing upon the congress, and all intended to aid the preparations for it, and to promote its success and usefulness, that is to say:

I. Sundry official reports of European governments on the prisons and prison administrations of their respective countries; in connection with which will be submitted a report of the commissioner's personal observations on foreign prisons and reformatories.

II. The principles of prison discipline as set forth in the works of Alexander Maconochie, one of the profoundest thinkers and most vigorous writers on penitentiary questions.

III. Reports by standing committees of the National Prison Association of the United States on criminal law reform, prison discipline, juvenile delinquency, and the disposal of discharged prisoners.

IV. A review of the State prisons, jails, and juvenile reformatories of the United States for 1871.

All of which is respectfully submitted.

E. C. WINES,

Commissioner of the United States to the International Penitentiary Congress of London.

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ACCOMPANYING DOCUMENTS.

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A.—OFFICIAL REPORTS OF EUROPEAN GOVERNMENTS ON THE PRISONS AND PRISON ADMINISTRATIONS OF THEIR RESPECTIVE COUNTRIES, FURNISHED IN REPLY TO QUESTIONS SUBMITTED BY THE COMMISSIONER OF THE UNITED STATES.

[Want of time for such a purpose has been an absolute bar to the preparation by the commissioner of any report on the penal and reformatory institutions visited and examined by him during his European tour of last year. He hopes to supply this lack in his final report, to be made after the International Penitentiary Congress shall have completed and closed its labors. The following is the series of questions submitted to the different governments, in reply to which the reports printed below have been furnished.]

QUESTIONS.

I. Are all the prisons in your country placed under the control of a central authority? If so, does this authority absorb all the powers of administration, or does it share them with local authorities, and in what proportions?

II. What is the classification of your prisons?

III. In what proportions are the cellular and associated systems of imprisonment applied in your country?

IV. What results have been obtained, severally, from these two systems? Which of them do you prefer, and what are the grounds of your preference?

V. From whence are the funds for the support of the prisons obtained? What proportion of these funds are yielded by the labor of the prisoners?

VI. Who appoints the directors and other officers of the prisons, and what is their tenure of office?

VII. What special abilities and qualifications do you consider necessary in prison officers? Are the qualifications judged requisite actually possessed by the greater part of these officers in your country?

VIII. Have special schools been established in your country for the education of prison officers? If such institutions do not exist, would you favor their establishment, and why?

IX. What pension is accorded to prison officers who have become incapacitated by age or otherwise to fulfill the duties of their office?

X. What is the exact difference between sentences to imprisonment, to reclusion, and to hard labor?

XI. Does there exist in your prisons a system of classification of the prisoners? If so, how is it applied, and what are its results?

XII. Can prisoners, by good conduct and industry, shorten their terms of imprisonment, and how is this reduction effected?

XIII. Do your prisoners share in the earnings of their labor? If so, in what proportion?

XIV. What other rewards, if any, are employed to stimulate the zeal of the prisoners?

XV. What prison regulations are most frequently violated?

XVI. What disciplinary punishments are employed in your prisons?

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XVII. Is an exact record kept of these punishments?

XVIII. Are chaplains provided in all your prisons, and for prisoners of all the different religions?

XIX. What, in general, are the duties of the chaplains?

XX. What importance do you attach to religious instruction as a means of reforming prisoners?

XXI. Are persons of both sexes, apart from the administration of the prisons, permitted to labor for the moral amelioration of the prisoners?

XXII. Do Sunday-schools exist in your prisons?

XXIII. How often are your prisoners permitted to write and to receive letters?

XXIV. Is the correspondence of the prisoners with their friends found to produce, upon the former, a good or evil influence?

XXV. Are the prisoners allowed to receive visits from their friends?

XXVI. How are these visits regulated? Is there between the prisoner and the visitor an officer charged with listening to their conversations, or is such officer only employed to observe their persons without interfering with the privacy of the interview?

XXVII. Is the moral influence of these visits good or bad?

XXVIII. What is the proportion of prisoners who are able to read at their commitment?

XXIX. Do schools for secular instruction exist in your prisons?

XXX. On what conditions and in what proportions are prisoners permitted to attend these schools?

XXXI. What branches of learning are taught in the prison schools, and what progress is made therein?

XXXII. Are libraries found in your prisons? What is the general character of the books composing them?

XXXIII. Do prisoners read much? What books do they prefer? What influence does their reading exert upon them?

XXXIV. Are your prisons provided with a good system of sewerage?

XXXV. How is the water-supply as respects both quantity and quality?

XXXVI. Are your prisons well ventilated?

XXXVII. What means are provided to insure the cleanliness of the prisons?

XXXVIII. How is the cleanliness of the prisoners assured?

XXXIX. How are the water-closets arranged?

XL. What system is adopted for lighting the dormitories and cells?

XLI. How are your prisons heated?

XLII. Of what material are the prisoners' beds made?

XLIII. What bedding is provided for them?

XLIV. What are the hours of labor, of recreation, and of sleep?

XLV. Where and how are the diseases of prisoners treated?

XLVI. What diseases are most frequent?

XLVII. What is the average proportion of the sick?

XLVIII. What is the average death-rate?

XLIX. Is there a distinction made in your prisons between penal and industrial labor? What kinds of labor are adopted in the different prisons?

L. Is the deterrent effect of penal labor conspicuous, as shown by the diminished number of relapses?

LI. What is found to be the moral effect of penal labor upon the prisoners?

LII. What is the effect of penal labor upon the health of the prisoners?

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LIII. Is industrial labor in your prisons conducted by contractors or directed by the administration itself?

LIV. Which of these two systems do you prefer?

LV. If there are different systems of contracting for the labor of the prisoners, which do you prefer?

LVI. What proportion of your prisoners are ignorant of a trade at the time of their committal?

LVII. Do the prisoners learn a trade while in prison?

LVIII. Is it regarded as important that the prisoner, during his incarceration, be taught the art of self-help, and how is this result sought to be attained?

LIX. Is the frequent repetition of short imprisonments for minor offenses found to produce a good effect?

LX. What is the proportion of recidivists?

LXI. Are recidivists sentenced to severer punishments than first offenders?

LXII. Does imprisonment for debt still exist in your country? If so, do imprisoned debtors receive the same treatment as imprisoned criminals?

LXIII. What, in your opinion, are the principal causes of crime in your country?

LXIV. In what proportion are the two sexes represented in your prisons?

LXV. Is the reformation of the prisoners made the primary aim in the prisons of your country?

LXVI. As a matter of fact, do your prisoners in general leave the prison better or worse than they entered it?

LXVII. Are efforts made to aid liberated prisoners in finding work, and thus saving them from a relapse? How is this done, and what results have been obtained?

LXVIII. Do prisoners' aid societies exist in your country? Are they numerous and active? What results have been accomplished by their labors?

LXIX. Are you satisfied with the penitentiary system of your country? What defects, if any, do you find in it? What changes or modifications would you wish to see introduced?

ANSWERS.

[N. B.—The Roman numerals, in all the reports which follow, refer to the questions printed above. It was not deemed necessary to repeat the questions in each individual report. The arrangement actually adopted was thought sufficiently convenient, and is a great economy of space.]

I.—FRANCE.

[Translation.]

I. The prisons of France, with exceptions to be indicated hereafter, depend upon a central power, which is represented by the minister of the interior, and, under his authority, by the director of the administration of prisons.

§1. CONTROL.

The central power exercises its control by means of general inspections, made by special functionaries, viz: inspectors general of prisons.

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Besides this direct and most important control, there is a local control of the prefects for all the prisons and penitentiary establishments; of the mayors and commissions of supervision for the houses of arrest, of justice, and of correction; and, finally, of the council of supervision for the colonies of correctional education of juvenile delinquents. It is necessary further to mention the intervention, though to a very limited degree, of magistrates of the judicial order.

General inspections.

The inspectors general have two classes of functions, the one accomplished during their tours of inspection, and the other, as will be hereafter seen, in the interval of these tours. They are charged with visiting all the prisons and penitentiary establishments, and they give account to the minister of the observations made on these visits, in a special report relating to each establishment.

The prefects.

The prefect represents the central power in the department as regards the supervision and administration of prisons; and it is his duty to visit, at least once a year, the prisons of his department. (Article 611 *du Code d'Instruction criminelle.*)

Mayors.

It is the duty of the mayor of each commune, where there is a house of arrest, a house of justice, or a house of correction, to make, at least once a month, a visitation of these houses. (*Article* 612, *du Code d'Instruction criminelle.*) By virtue of article 613, of the same code, there is, besides the police of these prisons. As a prison is an establishment of general and not merely municipal interest, the authority which the mayor is called to exercise therein partakes essentially of the central administration. It is as its representative that he acts on such occasions.

Commissions of supervision.

The commission of supervision, which is established, in principle, near each departmental prison, exercises, as its name imports, a supervisory action over whatever relates to health, to supplies, to religious instruction, and to moral reform.

The function of this commission is limited to the control of the various services. Its members, having no responsibility, cannot perform any act of authority in the prisons, in which it is important, moreover, to maintain unity of command.

As regards the penitentiary colonies of juvenile delinquents, the act establishes (*article* 8 *de la loi du* 5 *août*, 1850) a council of supervision, charged with the same mission of control in these establishments as the commission of supervision in the houses of arrest, of justice, and of correction.

Intervention of the judicial authority.

The penitentiary and correctional colonies are, besides, subjected to the special supervision of the attorney general of the jurisdiction, whose duty it is to visit them every year.

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But this is not the only case in which penitentiary establishments are subjected to the control of the judicial authority.

By the terms of the 611th article of the code of criminal procedure, the committing magistrate (*juge d'instruction*) is bound to visit, once a month at least, the persons confined in the house of arrest of his arrondissement, and the president of the court of assizes, at least once in the course of each session, must visit the persons confined in the house of justice.

§ 2. ADMINISTRATION.

Criminal legislation being the same for all throughout the entire territory of France, the same rules ought to control its application, without exception either of places or of persons. As regards prisoners under sentence, inequality of discipline is inequality of punishment. As regards prisoners awaiting trial, this inequality constitutes a grave abuse, because it subjects a man, innocent perhaps, to rigors and privations which could not be elsewhere imposed by the administration upon another man in the same condition.

To establish and maintain in the same prisons the application of the same principles and of a uniform system, two elements are indispensable, unity of direction and centralization of the financial means of execution.

Unity of direction.

The director of the administration of prisons is charged with administering, under the authority of the minister of the interior, the prisons and penitentiary establishments of every class in France. Under him, and as a deliberative consultative board, is found the council of inspectors general of prisons, which is called upon, in the interval of their tours of inspection, to give advice on the more important questions of the service. The instructions and regulations emanating from the central administration are addressed, through the intervention of the prefects, who represent the executive power in the departments, to the directors of the different establishments.

At the head of each central prison is found a director. His action extends to all parts of the service. He is specially charged with conducting the correspondence with the minister of the interior, to whom he addresses his reports on the financial, industrial, and disciplinary condition of the establishment, through the agency of the prefects, except in urgent and extraordinary cases.

Directors of the houses of arrest, of justice, and of correction are charged with the administration of those establishments in one or more departments. In the prisons situated at the place of their residence their action makes itself felt directly, like that of the director of a central prison, on all parts of the service, and in the other prisons indirectly, through the agency of the principal keepers, who receive their instructions and are required to address to them frequent reports.

An important part of their functions has reference to the economical administration of the prisons, to purchases, to the verification of expenses, to the control of the accounts, cash, and material; in short, to the preparation of the various financial documents which they send to the central administration.

The principal keepers are the agents charged with the care and supervision of the houses of arrest, of justice, and of correction.

The organization which has just been described is the same in all the

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departments of France, except in one only, that of the Seine, an exception which deranges the harmony of the system.

The directors of the public colonies of juvenile delinquents are assimilated by their functions to the directors of the central prisons. It is therefore the central power which conducts the administration by their hands.

It cannot be the same in the other colonies, which are private establishments. The director is only approved by the administration, and this latter exercises such control as it has only through the intermediate agency of the prefects and the inspectors general. The administration of these private establishments has been determined by a general regulation of recent date, which explains why they have not yet been able to attain that administrative uniformity which is remarked in the public establishments of the same kind.

The colonies are appropriated to children who have for the most part been acquitted, but have been sent by the tribunals into a house of correction, to be there trained under a severe discipline. There are establishments in which education is made more prominent than repression, and the duty of the central power is to see that the children are properly treated, and that they receive, conformably to law, a moral, religious, and industrial education.

Centralization of the financial means of execution.

A law of the 5th of May, 1855, which transferred to the budget of the state the ordinary expenses of the houses of arrest, of justice, and of correction, which had previously belonged to the departmental budgets, has accomplished, for all the degrees of imprisonment, the centralization of the financial means of execution; a centralization which till then existed only with regard to the central prisons. Nevertheless this is still a point where the central power is not completely independent of the local authorities, and where the vote of the general council of the department must lend its concurrence. The department has preserved since 1855 its property in the buildings used as houses of arrest, of justice, and of correction, and has been at the expense of all needed repairs.

Penal establishments not depending on the ministry of the interior.

Certain establishments for punishment do not depend on the direction of prisons in the ministry of the interior, to wit:

1. The establishments in which men are undergoing the punishment of hard labor.

2. The prisons appropriated to prisoners of the army and navy.

The administration of the bagnios, of the penal colonies, and of the prisons of ports and arsenals, is centralized in the ministry of the navy; that of the military penitentiaries in the ministry of war.

However the case stands with the central prisons, the houses of arrest, of justice, and of correction, and the establishments of correctional education for juvenile delinquents, the administration of prisons in the ministry of the interior has an importance which is computed by a budget of about 15,000,000 francs, by a *personnel* of 4,700 employés, and by an average population exceeding 50,000 prisoners.

II. The establishments which receive prisoners are:

Navy:

1. The penal colonies of Guiana and New Caledonia, and the bagnio of Toulon, for prisoners sentenced to hard labor.

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Interior:

2. The central prisons of hard labor and correction.
3. The houses of arrest, of justice, and of correction.
4. The penitentiary establishments devoted to the education of juvenile delinquents.
5. The chambers and depots of safe-keeping.

War and Navy:

6. The prisons devoted to prisoners of the army and navy.

1. PENAL COLONIES.

Bagnio at Toulon.

(Establishments placed under the jurisdiction of the ministry of the navy and of the colonies.)

The punishment of hard labor has been for a long time undergone in France, as formerly that of the galleys, in certain ports and arsenals.

The execution of this punishment, with the open-air labor of the convicts, in sight of the free population and in contact with it, was characterized by defects of every species and by innumerable perils. The law of the 31st of May, 1854, relative to the execution of the punishment of hard labor, brought a remedy to this state of things by substituting for the former the punishment transportation with hard labor. Establishments devoted to transportation, on the territory of one or more of the French possessions, other than Algiers, can be created only in virtue of a legislative act. Nevertheless, in case of obstacles in the way of the transfer of convicts, and until such obstacles shall have ceased, this punishment is undergone provisionally in France.

As a consequence of the enactment of the law of 1854, the bagnios of Rochefort and Brest were suppressed. There remains, therefore, only that of Toulon as a depot for convicts sentenced to transportation. The most important establishment for prisoners sentenced to hard labor is the penal colony of Guiana. A second was created in 1864, in an island of Oceanica—New Caledonia—which offers, by the salubrity of its climate and the fertility of its soil, conditions propitious to transportation. The transportation of women is authorized by the law, in view of marriages to be contracted with the convicts after their provisional or definitive liberation. The administration selected, from among the female prisoners of every class, those who expressed a desire to profit by these arrangements. These women are placed, to undergo their punishment until their provisional or definitive liberation, in a special establishment at Maroni, under the supervision of the religious ladies of Cherry. There is found, already, a certain number of women at Cayenne; but the majority of females sentenced to hard labor still undergo their punishment in the central prisons of the continent, agreeably to the sixteenth article of the penal code.

2. CENTRAL PRISONS.

The central prisons of hard labor and corrections receive—1. Certain persons sentenced to hard labor, namely, women and old men of the age of sixty and upward; 2. Persons sentenced to reclusion; 3. Persons sentenced as correctionals to an imprisonment of more than one year.

The central prisons, whose origin dates back to the law of the constituent assembly of October 6, 1791, were constituted a general system,

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to extend over the whole country, by an imperial decree of June 16, 1808. Their existing organization dates from the royal ordinance of April 2, 1817, which gave them the name they still bear, of houses of hard labor and correction, a designation in harmony with the penal code promulgated in 1810.

3. Houses of arrest, of justice, and of correction.

These prisons are also called departmental prisons, not only because they are devoted to the exclusive service of the department in which they are placed, but, above all, from considerations of property and of the budget. On one side, the property in them, though they belong to the State, was assigned to the departments by a decree of April 9, 1811, together with the charges thereupon, whether for repairs, enlargement, or the construction of new buildings; on the other side, the current expenses of these prisons were for a long time a charge of the departmental budgets.

These prisons receive—the arrested; the accused; the *correctionnels* sentenced to one year and less; persons sentenced to severer punishments, who are awaiting their transfer; police prisoners; persons imprisoned for debts in matters criminal, correctional, of simple police, and of *fisc;* juvenile prisoners, whether arrested, accused, or in the way of paternal correction; and civil and military prisoners *en route.*

Houses of arrest and of justice are indispensable to each jurisdiction; consequently they are found in each chief place of *arrondissement.* To answer to the intention of the law, (*article* 604 *Code d'Instruction criminelle,*) they ought to be entirely distinct from the prisons established for punishment. But the complications which would ensue upon this separation in the services, the increase of the *personnel*, which it would render necessary in the greater number of localities, in which a single chief keeper is sufficient for the three houses, and, finally, the difficulty of obtaining from the departments special places, have led to this result: that the three houses are, in general, but three distinct wards of the same prison.

4. Establishments devoted to the correctional education of juvenile delinquents.

These establishments receive minors, of sixteen years and under, of both sexes. They are divided, for young male prisoners, into penitentiary colonies and correctional colonies. In the first are placed—1. Young children acquitted in virtue of the 66th article of the penal code as having acted without knowledge, but who are not sent back to their parents; 2. Young prisoners sentenced to an imprisonment of more than six months and not exceeding two years. These establishments are public or private. Those are called public establishments which have been founded by the state, and of which the state names and pays the directors and employés; and those are called private establishments which are founded and directed by private persons, with the authorization of the state.

The correctional colonies receive—1. Young prisoners sentenced to an imprisonment of more than two years; 2. Young prisoners from the penitentiary colonies who have been declared insubordinate. The correctional colonies are all public establishments.

A similar classification has been established for young female prisoners. They are received either into a correctional ward directed by the

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state, or into penitentiary houses connected with religious establishments.

These various establishments were called into being by the law of the 5th of August, 1850. There are actually counted of them thirty-two, viz: three public colonies, four correctional wards, and twenty-five private colonies. Twenty establishments are devoted to young female prisoners. One of them is directed by the state.

5. Chambers and depots for safe-keeping.

The name of chambers for safe-keeping is given to places in which are received prisoners who are being conveyed from point to point in localities where there is no house of arrest, of justice, or of correction. These chambers and depots have the same destination as such houses, and are but places for the temporary confinement of prisoners *en route*. The chambers are under the care of the *gendarmes* of the locality; the depots under that of the agents of the administration of prisons. No punishment, however trivial, can be undergone in them. The number of this class of prisoners is about 2,400.

6. Prisons devoted to prisoners of the army and navy.

(These establishments are placed under the care of the ministries of war and of the navy.)

§ 1. *Houses of arrest and prisons of ports and arsenals.*—These establishments receive—1. The sailors, soldiers, or laborers of the navy under disciplinary punishment; 2. Persons arrested for crimes or misdemeanors within the jurisdiction of the several tribunals of the navy; 3. Persons sentenced by these tribunals to correctional imprisonment of one year and under.

§ 2. *Military prisons.*—Every military prison, situated in a place which is the seat of a council of war, should be divided into three sections: 1. A military house of arrest, receiving soldiers of every grade sentenced to disciplinary punishment; 2. A house of justice, receiving soldiers who are being conveyed before a council of war, and convicts awaiting either the execution of their sentence or a commutation of punishment; 3. A house of correction, receiving officers sentenced to the punishment of imprisonment, and soldiers sentenced to less than a year of imprisonment.

§ 3. *Military penitentiaries.*—These contain persons sentenced to an imprisonment of at least one year. These are persons undergoing a punishment of a correctional nature—the only punishment that does not exclude from the ranks of the army. Painful and afflicting punishments, such as irons, hard labor, reclusion, involve military degradation and the remission of the convict to the civil authority for the execution of those punishments.

III. The question relating to the measure in which the cellular and associated systems are applied in France will be answered with reference to the several classes of prisons.

1. *Central prisons.*

The cellular system is not applied in any central prison. The discipline of these prisons is that of detention in common with the obligation of silence. Some of them, however, have cellular wards, in which may be confined certain classes of prisoners.

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2. *Houses of arrest, of justice, and of correction.*

A certain number of these establishments is constructed on the cellular system. Out of four hundred in all, there are about fifty of this kind. The other departmental prisons have been constructed or arranged upon plans, the latest of which bears date the 7th of January, 1863, and which have had for their aim the moral advantages of cellular imprisonment, with economy in the means of execution. In these mixed prisons, then, the discipline is neither that of the cell nor that of imprisonment in common. It includes three kinds of imprisonment, that of wards designed for prisoners, whose isolation is required by no special circumstance, and who constitute the greatest number (with common yards, dormitories, and heaters;) that of common apartments which are capable of receiving certain classes of prisoners not very numerous; finally, that of individual apartments, designed to secure, in certain cases, private instruction, to protect against injurious or dangerous contacts young prisoners under arrest, who are shielded by a presumption of innocence, and also to separate individuals for whom, before or after their condemnation, exceptional precautions of discipline or safe-keeping are necessary.

3. *Juvenile delinquents.*

Among the establishments designed for youthful prisoners, the prison of la Roquette, situated in Paris, is the only one in which cellular imprisonment is applied day and night, but this prison receives only minors of sixteen years, arrested or accused, and persons sentenced to an imprisonment not exceeding six months.

IV. As regards the results of the two systems of separation and association, there can be no question in France, except as to houses of arrest, of justice, and of correction; the only ones, as we have just seen, which have been constructed partly on the cellular system and partly on a system of a different kind.

Nevertheless, it is impossible to establish, even for these prisons, a comparison of the results yielded by the two systems. On one side, in effect, the statistics do not make a distinction between prisoners in the cellular prisons and those confined in prisons of the other class; and, on the other, in a great number of the former, it is only the edifice which is cellular. The system followed is that of association by day, in workshops for labor, and in yards for the hours of rest. Cellular separation has place only at night. The cellular prison at Mazas, and a part of that called La Santé, both situated in Paris, form an exception to this state of things.

Preferences.—The successive tendencies of the administration as regards the system to be followed in the houses of arrest, of justice, and of correction, may be epitomized thus: 1. Exclusive adoption of the cellular system down to 1853; 2. Subsequently to 1853, abandonment of that system from motives of economy, and adoption of a mixed system; 3. Resumption of studies, commenced in 1840, on the application of individual imprisonment.

In the first period, the administration began by repelling every project of reconstruction and of repair of the houses of arrest, of justice, and of correction, not conformed to the rules of the cellular system. The expenses involved in this system, and the impossibility of any great number of departments providing the necessary funds from their own resources, arrested the favorable dispositions of the councils general; the

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administration then renounced, for the future, the cellular system, and entered upon a new path, by substituting the separation of classes for that of individuals. It is in this spirit that plans were prepared from 1853 and 1860 for the construction and arrangement of departmental prisons, which comprised, as we have already seen, wards, common apartments, and individual cells. These plans are still in vigor, only care has been taken, in building prisons during these later years, to multiply the number of individual cells.

But this system is not the last word of the administration in regard to the prisons of the departments. The results obtained by the system are far from being satisfactory. We shall see in effect, in the matter of relapses, that out of one hundred prisoners in the central prisons fifty-two men and thirty-one women had been previously confined as convicts in the departmental prisons.

The administration has, therefore, just resumed the studies commenced in 1840, on the application of individual imprisonment. This system, in effect, appears to be the only one capable of averting the dangers of promiscuous association, so formidable in prisons which receive prisoners of origins the most diverse—arrested, accused, persons sentenced for at least a year, convicts awaiting transfer, young prisoners, civil and military prisoner *en route*, &c., &c. Separation by classes presents no difficulties, but there is a selection to be made of persons for each class, which requires great discrimination and a special study of the cases and character of every prisoner to prevent a corrupting contact with others. The chief keepers of the prisons of *arrondissement*, who have to maintain the order and police of the prison and to watch over the general services of the house, cannot be required to engage in this minute study of prisoners. That is impossible, and it is what renders promiscuous association so dangerous.

Individual imprisonment, moreover, it would seem, ought to give to punishments of short duration a character of intimidation, which they now lack, the existing system too often producing only the sad effect of familiarizing the prisoner with the *régime* of the prison. The consideration of economy, which heretofore has been of controlling force, and whose reality has been placed in doubt by recent examples, no longer seems sufficient to balance the opposite considerations of public morality, which recommend the abandonment of the *régime* in common as far as the arrested, the accused, and persons sentenced to short imprisonments are concerned.

V. Provision for the cost of maintenance of the prisoners in most penitentiary establishments is made—1. By the payment by government of a sum for each day of imprisonment, fixed by contract, for a period, on agreement of the parties, generally of three, six, or nine years; 2. By the right conceded to the contractor, who has made the highest bid, to the product of the prison labor, on condition that he pay to the prisoners a portion of their earnings, the amount of which varies according to the penal class to which each prisoner belongs. The price of the labor is fixed by special tariffs, approved for each industry by the superior administration. In consideration of these conditions the contractor is obliged to provide for the board and maintenance of the prisoners, in health and sickness, as well as meet numerous obligations specified in a list of charges, which comprises not less than one hundred and sixteen articles.

Several important penitentiary establishments are administered, as regards their industries, directly by the State. This mode of administration admits of a practical comparison of the two systems, and affords

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also the possibility of utilizing the labor of the convicts under certain conditions which are quite incompatible with the management of the industries by way of contract; such, for example, as agricultural labors.

According to the latest statistics, the product of the labor in the central prisons, agricultural penitentiaries,* and kindred establishments, brought an average gain of 74.33 centimes (nearly 15 cents) for each day of *labor*, which was reduced to 53.90 centimes (nearly 11 cents) for each day of *detention*, or of presence in the establishment.

The average *peculium*,† assigned to each prisoner on the above-mentioned gain, was 33.48 centimes (nearly 7 cents) for each day of *labor*, and 24.68 centimes (nearly 5 cents) for each day of *detention*.

The contractor received, from the tenths conceded to him, 25.73 centimes (nearly 6 cents) for each day of detention. This sum represents the part which the prisoners contribute toward their support by their labor. The proportion is the same for the two central prisons and the three agricultural colonies, whose industries are managed by the state.

In general, and with the exception of the establishments in Corsica, the cost of support (not including the expenses of supervision and of administration) may be set down at 50 centimes *per capita* for each day of imprisonment. Consequently, it may be claimed that the convict meets about one-half the cost of his maintenance.

It is important to remark that in one of the female central prisons it has been possible entirely to withdraw the subsidy granted to the contractor, the earnings of the prisoners being sufficient for the support of the establishment. In another prison the contractor, instead of receiving anything from the state, pays to it a centime per day for each convict. It is permitted to hope from this example that the administration will at length attain the end which it has always sought in this regard, that of exempting the treasury from the personal expenses of the prisoners who are confined in its great prisons for punishment.

In the houses of arrest, of justice, and of correction, as in nearly all the central prisons, the contract system of labor is adopted. The system is worked upon the same principles in the departmental as in the central prisons.

The short stay of the prisoners in the greater part of these prisons, the difficulty of organizing workshops for groups of individuals, subdivided almost to infinitude, not only because of the small importance of the establishment, but also as a consequence of the necessity of classing them in distinct categories; and, in short, the difference in the number of tenths‡ assigned to the contractor make the departmental prison proportionally more costly to the state than the central prisons.

Since 1855, when the service of the houses of arrest, of justice, and of correction became centralized in the ministry of the interior, the product of the labor, which, outside of the prisons of the Seine, did not exceed 16,000 francs, rose in 1868 to 1,811,672 francs, (the earnings of about 14,000 laborers, out of a total number of prisoners amounting to 22,998.)

The average product of the labor, then, has been, in the departmental prisons, a little more than six centimes for each day of imprisonment, (8,267,764 days.)

In 1868 the average expenditure for maintenance of these establish-

* This name is given to the three central prisons established in the island of Corsica.

† The part of his earnings belonging to the prisoner.

‡ Persons under arrest and awaiting trial, who ask for work, are allowed seven tenths of their earnings.

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ments was 50.30 centimes, (not including the expense of supervision and administration.)

To sum up, it results, from the preceding explanations, that the part contributed by the prisoner toward the cost of maintenance may be placed at 50 per cent. in the central prisons, and at about 17 per cent. only in the departmental prisons.

The state, in the public colonies for juvenile delinquents, and the director, in the private colonies, gets, in principle, the total product of the labor of the inmates. There is no exception to this rule, save a deduction to provide for certain rewards, under the title of encouragements to labor and good conduct, and in what relates to children placed, temporarily, with persons outside.

The directors of the private colonies receive a daily compensation for the labor of the *colons*, varying from 60 to 70 centimes, by means of which they ought to meet the expenses of the administration, the cost of maintenance, the expenses occasioned by their primary and religious instruction, as well as the redemption of the original cost of the establishment.

It is difficult to estimate with precision the product of the daily labor in the penal colonies. The juvenile prisoners are most commonly engaged in agricultural labors, or in improving the estate—labors whose value can be counted only in the increased value given to the domain which has been thereby improved.

The cost of maintaining the convicts in the bagnio of Toulon—abatement being made of some diminutions of expense—was estimated, for the year 1868, at 65.68 centimes per day for each prisoner.

At Guiana the cost per day amounted to not less than 1 franc and 71 centimes, including the proportional expense of transportation and return. There must, however, be deducted from this cost the value of the work done by the convicts, in regard to which it is impossible for the ministry of the interior to give sufficient indications.

VI. In regard to the appointment of officers and their tenure of office: The rules which govern the naming of the various agents who compose the *personnel* of the penitentiary establishments are different according as the question relates to—1. The central prisons, the agricultural penitentiaries, and the public colonies of juvenile delinquents; 2. The houses of arrest, of justice, and of correction; 3. The private colonies of juvenile delinquents.

In the central prisons and other similar establishments the functionaries, employés, and agents, to whichever service they may be attached, that is, where they are proposed for the administration, properly so called, or for special services, or for supervision, are named by the minister of the interior. An exception is made in the case of keepers called residentiary, (*stagiaires*,) who are admitted by the prefects on presentation by the directors. (Decree of the 24th December, 1869, articles 8 and 9.)

As regards the houses of arrest, of justice, and of correction, the functionaries and employés proposed for the administration are named by the minister, and the employés of the other services are named by the prefects, as also the agents of supervision, other than the chief keepers. Still, these appointments do not become definitive till they have received the ministerial approval. As regards the principal keepers, a recent decree of the chief of the executive power, under date of the 31st of May, 1871, reserves their appointment to the minister of the interior.

By the terms of the law of the 5th August, 1850, relative to the

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education of juvenile delinquents, every private penitentiary colony is governed by a responsible director, approved by the minister of the interior. The employés placed under the orders of the director must be, in like manner, approved by the prefect. (*Loi du 5 août* 1850; *Règlement général du* 10 *avril* 1869.)

In the department of the Seine, where the prisons are managed, in many of their relations, under authority of special provisions, the directors are named by the minister of the interior, on presentation by the prefect of police; the other employés are named by the prefect. In effect, it is the prefect of police who, in Paris, administers the penitentiary establishments.

The inspectors general of prisons and penitentiary establishments are named by the minister of the interior.

The duration of the functions of the different employés composing the *personnel* of the penitentiary service is not limited by any determinate time. The agents who have not been gravely derelict in the exercise of their functions continue in place till they have reached the age at least of sixty and have been in service thirty years.

VII. The seventh question relates to the necessary talents and qualifications of prison officers.

The management of penitentiary establishments requires technical and administrative knowledge of great breadth, and offers, besides, special difficulties, arising out of the complicated organization of the service. It demands, in truth, a profound knowledge of business, of ministerial regulations and details, and an unremitting application, a quality essentially requisite in all directors. The administrator who finds himself face to face with a contractor whose interests are directly antagonistic to those of the state, ought to unite an unceasing watchfulness with an intelligent control. The principal duties of the administrator of penitentiary establishments—such as the organization of the prison labor, the examination of tariffs of labor, the maintenance of discipline in the midst of a perverted population, the choice and employment of means to awaken in the prisoners thoughts of repentance and ideas of moral renovation—all these duties, and others analogous, demand a special aptitude, fortified by an experience more or less extended. Penetrated with the idea that the direction of the penitentiary establishments cannot be confided, without the gravest risks, to agents who do not offer the most trustworthy guarantees, the superior administration has established rigid rules to guard against the bestowment of the elevated functions of the service upon agents whose aptitude and experience would leave the least room for doubt. In the same order of ideas, it exacts, in the case of all its agents, of whatever degree, the knowledge demanded by the positions which they are to fill, and makes their promotion dependent on conditions of time and experience, varying according to the importance of the trusts to which they aspire. (*Décret du* 24 *décembre* 1869, *titre III.*) In short, to keep out of the service of the prisons agents unable to offer the guarantees desired, a ministerial decree, under date of the 25th of March, 1867, instituted, in the ministry of the interior, a commission charged with the examination of candidates for employment in the active service of the central prisons and the houses of arrest, of justice, and of correction. The programme of the required examination comprises the following points: writing, grammar, arithmetic, the principles of accounts, history and geography, (principally of France,) general notions of the penal system and of criminal procedure, general ideas of civil law, the civil and judicial administration, and the most important provisions of the laws,

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decrees, and ordinances relating to the penitentiary *régime*. The examination includes, in addition, a written composition.

Thanks to these various measures, the *personnel* of the prison service is composed, for the most part, of agents, enlightened, capable, and up to the height of the duties with which they are charged. Many of the higher officers unite to all the aptitudes required in the director of a penitentiary establishment a rare administrative ability and an extensive knowledge of criminality. In the lower ranks of the *personnel*, a majority of the agents are upright, zealous, and earnestly devoted to their duties.

VIII. There do not exist in France schools specially devoted to the education of the directors and employés of prisons, and the necessity for establishing them has not been made apparent. The best school, in matters of this kind, appears to be that of practice and experience, and the prescriptions of the decree of the 26th December, 1869, constitute, certainly, sufficient guarantees that positions in the prison service will not be confided to incapable and inexperienced agents.

IX. As has been said in the answer to a previous question, prison officers whose commissions have not been revoked, continue the exercise of their functions until the day of their retirement from the service. The different agents of the penitentiary administration are subject, as regards their retirement and the pension that may be granted them, to the rules embodied in the law of the 9th of June, 1853, relating to civil pensions. The principle laid down by this law is, that every public functionary, paid directly from the funds of the state, has a legal claim to a retiring pension, when he fulfills the required conditions of age and of continuance in the service, that is to say, when he has attained the age of sixty, and has accomplished a service of twenty years. It is important to remark that account is made of military services, when there are superadded to them twelve years, at least, of civil services. Moreover, a pension can be granted at fifty years of age, and after twenty years of service, to those who have become incapacitated from a longer discharge of official duty by grave infirmities resulting from the exercise of their functions. In short, this same law relieves from every condition of age and continued service, 1. Those who may have been disabled from continuing their service, whether as the result of an act of devotion in some public interest, or in exposing their own life to save the life of one of their fellow-citizens, or as the result of a struggle or combat encountered in the discharge of their duties; 2. Those to whom a grave accident, resulting, notoriously, from the exercise of their functions, shall have made it impossible to continue them.

X. The tenth question calls for an explanation of the difference between sentences to simple imprisonment, to reclusion, and to hard labor.

Simple imprisonment is a correctional punishment; its duration is for six days at least, and for five years at farthest. The individual sentenced to simple imprisonment may be deprived, wholly or in part, of his civil and his family rights. In case of relapse, the duration of the punishment may be doubled.

The punishment of simple imprisonment is undergone in the departmental houses of correction, in case it is not for more than a year.

Sentences to simple imprisonment for more than a year are undergone in the central prisons of hard labor and correction.

The convict is employed at some one of the labors carried on in the establishment. (*Articles* 40, 41 *du Code pénal.*)

Reclusion is a punishment afflictive and infamous. Every person sentenced to reclusion is confined in a central prison, and employed in

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labors which are carried on in the prison. The duration of this punishment is for five years at least, and for ten years at the utmost.

A sentence to the punishment of reclusion implies, moreover, the loss of civic rights.

Hard labor is an afflictive and infamous punishment.

The actual mode of application of this punishment is regulated by the law of the 30th of May and 1st of June, of which mention has already been made.

The sentence to hard labor for life implies civic degradation and civil death. A sentence to hard labor for a limited term draws after it civic degradation. The person so sentenced is, during the continuance of his punishment, in a state of civil death. A guardian and subrogate guardian are appointed for him to manage and administer his goods.

The sentence which imposes the punishment of hard labor is printed and posted in the central city of the department, in the city where the sentence was pronounced, in the *commune* where the crime was committed, and in that of the domicile of the convict.

Criminals sentenced to hard labor for a limited term are, at the expiration of their sentence and during their whole life, legally under the supervision of the police.

XI. In the departmental prisons the prisoners are, as much as possible, divided into classes.

Adults and juveniles under arrest and civil and military prisoners *en route* occupy separate places in a ward which takes the name of house of arrest.

The accused, and persons sentenced by the court of assizes, awaiting their transfer, occupy distinct places in a ward which takes the name of house of justice.

Persons sentenced to simple police punishments, and those sentenced correctionally to punishments whose duration does not exceed a year, are confined in a special ward, which takes the name of house of correction.

In the female wards, the arrested, the accused, the sentenced, young girls, and prisoners *en route*, form distinct classes, and occupy separate apartments, as far as the prison buildings permit.

In what concerns the classes of sentenced prisoners forming the populations of the central prisons, the second article of the royal ordinance of April 2, 1817, directs that persons sentenced by courts of assizes and by correctional tribunals shall be confined in distinct and separate places.

Hitherto it has not been possible to apply this rule, but the central administration has for some time had under consideration a project which will enable it soon to give effect to the terms of the above-mentioned ordinance.

Conformably to this project, certain central prisons will be exclusively devoted, some to reclusionaries, others to correctionals.

The male and female prisoners undergo their punishments in distinct central prisons. Special wards in the central prisons of Clairvaux and of Nîmes are reserved for persons sentenced to simple imprisonment.

Juveniles from sixteen to twenty-one years of age, who from their age are exposed to certain dangers from which it is necessary to withdraw them, are placed in the agricultural penitentiary of Castelluccio, Corsica, or in special wards.

For a long time the French administration has felt the necessity of creating in the prisons classes based, above all, upon the degree of perversity of the convicts confined in them.

Thus, on the one side, the dangerous prisoners, those who, before

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their conviction, had a character which would be likely to expose them to the outrages of their fellow-prisoners, or who might be a cause of disorder and insubordination, are placed in special cellular wards, called wards of isolation.

Wards to which has been given the name of wards of preservation and amendment, have, on the other side, been established in various central prisons and appropriated to persons sentenced for a first offense committed under the influence of a sudden impulse, or of some violent and momentary passion.

This experiment is still so recent that it would be rash to pronounce upon its results; but the conditions under which it has been thus far conducted are of a nature to encourage the administration to persevere in the path on which it has entered. It can be affirmed that the prisoners placed in these wards have shown themselves sensible to the distinction of which they have been made the object, and have exerted themselves to justify it by their good conduct. They have been remarkable for their industrious application to work, and the local administration has rarely been under the necessity of putting them back into the common ward.

XII. It is asked whether prisoners, by their good conduct and industry, may shorten their punishment, and, if so, in what way? To this we reply:

Prisoners may be restored, by pardon, to free life; they can also obtain commutations or reductions of punishment. An ordinance of February 6, 1818, fixes the rules to be followed in applications for clemency, which is generally exercised in concert with the administrative and judicial authorities.

The admission of prisoners on the registers of preservation is not exclusively the result of their good conduct in prison. Regard is also had to their antecedents and the causes of their conviction. Greater severity and circumspection are shown in regard to recidivists and to convicts whose crimes point them out as specially dangerous, as well as in regard to those who, from their criminal connections, would seem almost sure to fall back into crime after their liberation.

As a general thing, prisoners placed on the lists of preservation must have previously undergone one-half of their punishment; still, this condition is not indispensable.

Finally, what is to be said relating to military prisoners will be introduced under a special head.

XIII. The products of the labor of persons sentenced correctionally, who undergo their punishment in a departmental house of correction, are shared in moieties between the administration and the prisoners, the administration surrendering its share to the contractors, who, by the terms of their contract, are charged with the entire expense of the economic services. The state pays to the contractors, in addition, a fixed sum for each day of imprisonment.

Labor is obligatory only for those who have been sentenced. The arrested and the accused can work when they desire it, and when it is possible to place tools in their hands without having to fear suicides or escapes.

The labor of the arrested and the accused, who have a right to the whole of the product, is the object of special agreements. To indemnify the contractor, who has to furnish material and tools, there is made, in his favor, from the sum total of their earnings, a deduction of three-tenths. In the central prisons the product of the labor is divided into tenths. A portion of these tenths is assigned to the convicts, and takes

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the name of *peculium*. The quota of tenths granted to the convicts is determined by the nature of the punishments and the number of convictions incurred. The assignment is adjusted between the three classes thus: correctionals, five-tenths; reclusionaries, four-tenths; those sentenced to hard labor, three-tenths.

The part assigned to prisoners sentenced on relapse is reduced from one to two-tenths for each previous conviction, down to the limit of the last tenth, which is, under all circumstances, paid to the convict.

The *peculium* is divided by moieties into *peculium* disposable and *peculium* reserved. The first is at the disposition of the convicts during their imprisonment for certain authorized uses, and especially for the purchase of supplementary provisions and supplies, for the relief of their families, and for voluntary restitutions. It also furnishes reserves, to the profit of the treasury, for fines, punishments, breaking prison, or damages to the prejudice of the state or the contractor. The *peculium* reserved was established in view of securing to liberated prisoners some resources for their first necessities on their discharge from the penitentiary.

The number of tenths, allowed to convicts by the ordinance of 1843, may be increased on account of their good conduct and their diligence. There may be granted to them, in consideration of these qualities, even six-tenths, conformably to a decree of 1854. The disposable *peculium* may be increased by gratuities granted by the treasury, the manufacturers, or the contractors, under the title of recompense and encouragement; and it may also be augmented by the transfer, under the same title, of portions of the *peculium* reserved to the *peculium* disposable.

Finally, as regards juvenile prisoners, the general regulation of the 10th of April, 1869, directs that the chiefs of colonies shall submit to the minister the dispositions having in view the rewarding, by a pecuniary payment drawn from the product of their labor, those youths who shall have distinguished themselves by their industry, their religious sentiments, or their obedience.

The same regulation authorizes the directors of the colonies to hire or confide, temporarily, the juvenile prisoners to private persons for agricultural labors, with the sanction of the minister of the interior, and under certain conditions.

Juveniles thus farmed out have a right to a moiety of the wages paid for their labor. These sums are given to them at the time of their liberation.

XIV. Other rewards, accorded to convicts, are: Designation for employment as foreman of a workshop, monitor in the school, overseer of a dormitory, and other positions of trust, such as hospital attendants, store-keepers, secretaries, &c.

In the colonies of juvenile prisoners the rewards are: the gift of playthings, public commendation, prizes at the time of the general distribution, positions of trust, grades, badges, (ribbons for the young girls,) good marks, additional food, the table of honor, inscriptions on the roll of honor, provisional liberation, or placing at apprenticeship outside of the colony, military enlistments, and the gift of little books, with credits in the savings-bank.

XV. The moral offenses most frequently exhibited are theft, assaults, indecencies. As regards the infractions of disciplinary rules, more than half the cases in the central prisons consist of violations of the law of silence.

In most of the penitentiary establishments, next to that just named,

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the most frequent infractions are: refusal to work, the secret use of tobacco, gambling, trafficking, and the unlawful possession of money.

The men sentenced to simple imprisonment are those who commit the greatest number of moral offenses, as well as infractions of the rules of discipline.

In the female prisons a comparison of the whole number of offenses and infractions yields, in like manner, a result unfavorable to those who are sentenced to simple imprisonment.

XVI. Order and discipline are, in general, well maintained in all establishments dependent upon the penitentiary administration, without the necessity of a recourse to coercive measures of an excessive severity.

Acts of rebellion and violence take place to only a limited extent; thanks to the vigorous enforcement of the rules intended to insure a strict but equitable distribution of disciplinary justice.

The punishments authorized by the regulation of the 10th May, 1839, so far as the central prisons are concerned, and those sanctioned by the regulation of the 30th of October, 1841, applicable to the houses of arrest, of justice, and of correction, are: confinement in a cell, with or without irons, the hall of discipline, dry bread for three days or more, deprivation of the *cantine*, or of other food, the reduction of the tenths, fines, privation of correspondence and of visits, and sometimes the loss of an honorable position, such as that of foreman, overseer of a dormitory, monitor in school, &c.

The convict who has incurred disciplinary punishments cannot be placed on the roll of honor.

Corporal punishments are expressly forbidden.

The punishments authorized in the colonies of juvenile prisoners are: privation of recreation, of correspondence, and of visits, the picket, kneeling, cleaning prison, the wearing of a disciplinary dress, the loss of grades, badges, and positions of trust, bad marks, reproof administered in private or in public, isolation at meals, erasure from the roll of honor, and confinement in the punishment cell.

Escape from prison involves the loss of the *peculium* of the juvenile prisoner, and prevents his being proposed as a candidate for provisional liberty.

Confinement in a punishment cell can be inflicted only for offenses of the gravest character.

XVII. Every day (Sundays and feast-days excepted) the director of a central prison, assisted by his assessors, holds a tribunal of disciplinary justice, at which are required to appear prisoners, reported on the previous evening as having committed some infraction.

The chief keeper inscribes, at the same moment, upon his register the decisions of the director.

Minutes are kept of the proceedings of each session.

The punishments adjudged are inscribed by the schoolmaster on the bulletin of the moral statistics of the convict.

In the houses of arrest, of justice, and of correction, the punishments are inflicted by the director or the chief keeper, and are inscribed on a special register, which is subject to the inspection of the prefect and the mayor.

In the colonies of juvenile delinquents the director alone has the right of inflicting punishments; these must be inscribed on a special register, and on the bulletin of moral statistics, which is attached to the papers (*dossier*) of each inmate.

XVIII. In the houses of arrest, of justice, and of correction, a chap-

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lain, chosen ordinarily from among the priests attached to a parish of the city, is charged with the moral and religious service. In each of the central prisons, and of the more important houses of arrest, of justice, and of correction, a special chaplain is exclusively devoted to the religious service, and is considered a regular employé of the establishment.

Liberty of conscience is guaranteed to convicts of all religions. Every prisoner, on his entrance into the prison, is required to declare to what religion he adheres, a declaration whose truth is verified by an administrative information, and in case he does not belong to the Catholic religion he is transferred, whenever it is possible, to an establishment designed to receive prisoners of the same religion with himself.

In the houses of arrest, of justice, and of correction, every non-Catholic prisoner under arrest or accusation, whether Protestant or Israelite, is interrogated as soon as he enters the prison, to ascertain whether he wished to be visited by a minister of his religion, and, upon his affirmative response, the minister least distant from the establishment is written to and informed of his wish.

As regards the convicts, the regulations are formal; they are required to be present at all the exercises of their religion in the prison where they are undergoing their punishment.

XIX. In the houses of arrest, of justice, and of correction, which in general—save in the chief places of the departments—have but a moderate population, the duties of the chaplain are limited to celebrating divine service on Sundays and feast-days, to giving to the prisoners, at least once a week, a religious discourse, to visiting the dungeons, cells, and infirmaries, to being present with those condemned to death at their last moments, to visiting the sick when they desire it, and to teaching the catechism to the young prisoners who have not made their first communion. His visits in the prison must be made at least twice a week.

These obligations are common to the ministers of dissenting religions in everything which is applicable to them.

In the large penitentiary establishments, the chaplains consult with the directors in determining upon the various religious offices and services. They visit the infirmaries, the sick, the places of punishment, and the solitary cells. In the sessions of the tribunals at the *prætorium* of disciplinary justice, they are entitled to a place among the assessors of the director. To prisoners who are prevented, by their age or infirmities, from taking part in the labors of the evening, they give moral, religious, or instructive readings. They are called upon to give their advice on propositions for the exercise of executive clemency.

XX. Religious instruction cannot have a great importance in the houses of arrest, of justice, and of correction, as their population is renewed almost daily, more particularly in the houses of arrest of *arrondissement*.

The chaplains of these establishments, being at the same time parish priests, have not generally the time necessary to discharge their ministry with success.

In establishments situated in the chief place of the department, where the sojourn of the prisoners is more prolonged, the chaplain is often exclusively attached to the prison. He can then devote more time to the reformation of the prisoners.

In the central prisons for women, where, over and above the aid of the chaplain, there is that of religious communities, to whose care is confided the service of supervision, it is no uncommon thing to see prisoners come to themselves, and to renounce a past which they strive to forget.

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Prison reform has found an active co-operation in the devotion and piety of the sisters.*

Religious instruction does not yield, in the central prisons for men, as good results as in those for women, whatever may be the efforts of the chaplains.

Recent statistical studies have informed us that, generally, convicts coming from the country are more accessible to religious sentiments, and the precepts of morality, than those from great cities, that is to say, from important manufacturing cities, where corruption is more advanced and where the principles of religion are often ignored or denied.

XXI. No person is admitted into prisons to labor for the reformation of the prisoners, without a special authorization from the minister of the interior.

In the houses of arrest, of justice, and of correction, commissions of supervision, composed of men held in the highest esteem in each department, have been formed, whose mission is to watch over all the services of the prison, and, in particular, over everything that relates to the moral reformation of the prisoners.

These commissions are called, above all, to give their services in the prisons of *arrondissement*, where the action of the director, whose residence is at the chief place of the department, is not immediately felt.

Commissions of supervision have not, as yet, performed any services in the central prisons.

XXII. There is not in our prisons any Sunday-schools, properly so-called. The administration aims to have the repose of the Sabbath strictly observed, and the day consecrated to religious offices and to the reading of moral and instructive works. Yet a number of the chiefs of penitentiary establishments, with a view to avert the dangers of a protracted idleness, have thought it their duty to organize an hour of school on Sunday. The superior administration has generalized this innovation.

In the penitentiary colonies, where, at a certain period of the year, the exigencies of agricultural labor puts an end to the work of the class-room, the juvenile prisoners find compensation in the instruction given them, for two hours, on the Sabbath.

XXIII. A special regulation of the administration determines, in each house of arrest, of justice, or of correction, the days and hours on which attention must be given to correspondence.

In the central prisons, ordinarily the prisoner can, once a month, on a Sunday or a feast-day, write to his family. He can correspond only with his nearer relatives, and with the guardian appointed for him, in execution of the nineteenth article of the penal code, save in exceptional cases, of which it belongs to the director to judge.

All relation with convicts, confined in other prisons, and even with persons arrested or accused, is forbidden him, unless, at least, there exist ties of consanguinity between them and the prisoner. The same prohibition exists in regard to liberated prisoners—no communication being permitted with them. In a word, the administration permits to the convict correspondence only with his family, and such as is absolutely required by attention to positive interests.

The letters which prisoners may have occasion to address to the administrative authorities, and letters relating to disclosures to be made

* A special religious order—the order Marie-Joseph—was founded thirty years ago, for the service of supervision of female prisons.

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to the judicial authority, go sealed to their destination, without having undergone the inspection of the chief of the establishment. In this regard any facility is accorded to the prisoners.

The directors of prisons are charged with examining the correspondence of the prisoners on their arrival and at their departure. This duty is confided to the chief keepers in the houses of arrest, of justice, and of correction. The letters retained by these last must be sent to the mayor or the sub-prefect, who considers whether there is any occasion to deprive the prisoner of his correspondence.

With regard to permission to receive letters from outside, the prison regulation determines still the conditions of the correspondence. In the central prisons it is the duty of the directors to arrest all letters which contain communications in violation of the rules of the service. In such cases extracts are made which are imparted to the convict.

XXIV. Correspondence with friends other than relations is not allowed. The prisoner can write only to the members of his family most nearly related to him. If appearances may be trusted, if account is taken of the sacrifices which the prisoner imposes on himself in sending to his family pecuniary aid, we are compelled to recognize the fact that the ties of relationship are still very strong.

XXV. The reasons which have led to the prohibition of all correspondence with their friends, equally forbid that they should receive the visits of these latter.

Beyond the cases of special authorization by the prefects and sub-prefects, convicts can receive no visits. There are, nevertheless, excepted from this rule the father, mother, wife, husband, brother, sister, uncle, aunt, and guardian, for whom, in the departmental prisons, the written authorization of the sub-prefect suffices, and in the central prisons that of the director of the establishment or the prefect.

As regards the visits made necessary by higher considerations, such as those of advocates, notaries, magistrates, or ministerial officers, a special authorization is necessary, and is generally accorded.

Prisoners arrested or accused can receive the visits of their relatives, or carry on correspondence with them, only so far as the committing magistrate or the attorney general of the republic shall not have forbidden it.

XXVI. The special rule of each establishment determines the days and hours at which it is permitted to relatives to visit the prisons. Permits of communication are given—on work days, only for the hours of recreation; on feast-days and Sundays, only at times not consecrated to religious offices.

During the visit, the duration of which is fixed by rule, and does not ordinarily exceed twenty or twenty-five minutes, an agent of the service of supervision is present for the purpose of preventing all communication other than that by word of mouth, and to overlook the parties and prevent whatever might give occasion to abuses or to infractions of the discipline. Yet the directors accord to the prisoner, under certain circumstances, greater facility and more liberty to communicate with the members of his family than is indicated above.

XXVII. The moral effect of these visits is, in general, rather good than bad.

XXVIII. The number of prisoners who are able to read at the time of their commitment may be determined thus:

During the three years 1867 to 1869, when the average number of prisoners under arrest and accusation rose to 444,133, 1,939 persons (men and women) were able to read, that is 43.7 per cent.

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During the years 1866 to 1868, the average number of convicts rose to 18,463; of this number 2,348 were able to read, which gives an average of 12.72 per cent. per annum.

Finally, during the same three years, out of a mean population of juvenile prisoners to the number of 8,139, 1,532 were able to read, which is an average of 18.86 per cent.

XXIX. The organization of primary instruction in the penitentiary establishments of France dates really from 1819. In virtue of a decree of the 26th of December of that year, primary instruction, embracing reading and the first elements of calculation, was required to be given to prisoners, following, as far as their number permitted, the method of mutual instruction.

Since that time the administration has established schools in all the important prisons.

In 1866, the minister of the interior ordered that a greater extension be given to primary instruction, and required that almost the entire prison population should be made to share in it, with the exception of old men, invalids, and those whose perversity requires their exclusion. The greater part of the departmental prisons are necessarily without schools on account of the very brief sojourn of the prisoners in them, and the obligation which exists of separating the different classes; but the administration has succeeded in organizing schools in the prisons of the chief places of departments, in which the greater number of prisoners permits the employment of a clerk, who is charged at the same time with the keeping of the school.

In the establishments of correctional education primary instruction is required to be given to all the juvenile prisoners. It comprises reading, writing, the first four rules of arithmetic, and the legal system of weights and measures. To this list of branches may be added mental calculation, surveying, linear drawing, and general notions on the geography and history of France. It is in like manner recommended that, in the establishments appropriated to young girls, elementary instruction be carefully imparted.

XXX. The penitentiary administration has not been able, thus far, to allow all the prisoners to participate in the benefits of primary instruction. While striving to give a stronger impulse to instruction, it has been obliged to discriminate in admitting prisoners to the school, by receiving first the youngest, afterward adults, and among the latter those whose conduct is the most satisfactory.

In most of the male prisons the number of prisoners admitted to the school varies from 12 to 15 per cent. of the total population. In the female prisons, it is from 5 to 8 per cent.

Attendance at school is obligatory on all the juvenile prisoners. Several hours of each day must be spent in school, except when the exigencies of agricultural labor, at the time of harvest, compels a restriction of the schooling to Sundays.

XXXI. The instruction given in the prison schools consists of reading, writing, calculation, a little orthography and geography, and the metric system.

As regards the methods followed the systems are different; they vary according to the judgment and taste of the teachers.

In the more important houses of arrest, of justice, and of correction, and in the male central prisons, the school is presided over by a lay teacher, to whom the chaplain lends, from time to time, his co-operation, in order to give to the instruction the moral and religious character which

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the administration seeks always to impress upon it. Monitors are selected from among the more intelligent and better educated prisoners.

In the female central prisons the school is confided to the care of religious sisters. They are aided by monitresses chosen from among the prison population.

The progress made by the prisoners of both sexes is generally rather slow, owing to the little aptitude of the greater part of the scholars. Many of the prisoners who entered wholly illiterate leave the prison knowing how to read, to write passably well, and to perform the simpler operations of arithmetic; but a complete elementary education is rare. The administration has not been, thus far, as well satisfied as it could have wished with the results of the instruction given in the prisons.

It is at this moment engaged in seeking new methods of instruction, and the council of general inspection is charged with the study of measures to be adopted for a better organization of the schools in the penitentiary establishments.

The teachers are required to make each year the reports necessary to inform the superior administration as to the progress of instruction. They must state the degree of education possessed by the young prisoners at the time of their entrance into the establishment. Mention of this, and of the date of admission to the school, are written on the copy-book of each scholar, under his name, to which is added a statement of his age. The copy-books are shown to the inspectors general at the time of their visits, so that they may personally assure themselves of the progress of each juvenile prisoner, and particularly of those who are soon to be liberated.

XXXII. At the end of successive studies on the subject of libraries, the minister of the interior addressed, in 1864, to all the heads of penitentiary establishments, a catalogue comprising the books which were thereafter required to be distributed for the reading of the prisoners.

This catalogue includes works for Catholics, Protestants, and Israelites, which are intended to serve for their moral and religious instruction; also books of history, accounts of voyages, literary works, treatises on ordinary and technical science, novels, and miscellaneous works. These books are examined with care by the council of general inspection of the prisons. The works of piety admitted by each religion are designated only on the recommendation of the ministers of the different religions. The catalogue contains special indication of the books more particularly adapted to men, to women, and to children.

At this moment the superior administration is engaged in organizing libraries in all the penitentiary establishments. This measure, which is on the point of realization, will involve in the purchase of books an expenditure of about 30,000 francs.

XXXIII. The prisoners are generally fond of reading. Those who have a knowledge of this art nearly always profit from the practice of it. They have their Sundays for reading, and on week-days they read during the hours of rest, and at meals.

In some establishments there are readings in common to convicts who are unoccupied, and to others during the intervals of labor. Sometimes such readings are given during meal-time in the refectory. The prisoners listen to them with interest, but those who know how prefer to read to themselves.

The distribution of books takes place under the superintendence of an agent of the administration, viz, either the instructor or the chaplain, who, in his selection of books, has regard to the antecedents, the aptitudes, and the conduct of each prisoner, and the officers charged

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with this duty perform it in such manner as to cultivate a taste for reading, by all the means which are consistent with the exigencies of the service. The obligation of silence imposed on the prisoners by the regulation of the 10th of May, 1839, has greatly contributed to a love for reading on their part.

Books specially written for prisoners are not those which they prefer. They read with greater pleasure books of history, voyages, novels, and narratives which have touches of the marvelous, of elevated sentiment, and of renowned actions.

Reading exerts a happy moral influence upon the prisoners. Those who contract a taste for it during their imprisonment are generally well behaved. Properly directed, reading effects a salutary revolution in the soul and imagination of the prisoner. Hence, the choice of books is a matter of great importance. Works which amuse by the interest of the drama and the charm of the style, and those which have in them an element of instruction, contribute to enlighten and to inform the prisoner, at the same time that they afford to him diversion and consolation. They serve to awaken in him the love of home, and sometimes predispose him to the duties of religion.

XXXIV. The central administration attaches great importance to the hygiene of the prisons, and it takes special pains to free them from every cause of humidity. Even where the buildings which serve for imprisonment are not its own property, it reserves to itself an absolute right of control, as well as of preliminary approval, of all constructions and repairs appertaining to them. It has the power to insure, and it does insure effectively, that sanitary precautions are never neglected.

The projects, plans, and estimates prepared either by the architects of the central prisons, or by the architects of the departments, or by other professional men, are, agreeably to the 12th and 14th articles of a decree of the chief of the executive power, under date of the 25th November, 1848, submitted to the examination of the inspectors-general of prisons, assembled in council, to whom are added, whenever the question relates to sanitary science, the medical inspectors general at tached to the sanitary service of the prisons.

To understand thoroughly the spirit in which this examination is made, especially as regards drainage, it is sufficient to glance over a circular of the 7th January, 1863, to which is subjoined a plan for the construction or alteration of houses of arrest, of justice, and of correction.

There are found in this plan the following rules:

The foundations and lower portions of the ground floor should be made in such manner as to completely exclude the humidity of the soil.

The soil of the ground floor should, as a general thing, be raised a half meter at least above the exterior soil, by means of materials adapted to exclude humidity, and in cases where it is absolutely necessary to construct dormitories on this floor, this elevation should be carried to not less than one meter.

At the foundation of the buildings there should be placed reverses or foot-pavements, to carry off the humidity.

For carrying off the water, there should be gutters or sewers, but no draining wells.

If these regulations cannot be applied, in all their details, to old constructions, they serve, at least, as a base or term of comparison, and act as a motive leading to alterations, by means of which the administration has succeeded in securing, almost everywhere, a satisfactory sanitary condition of the prisons.

XXXV. No prescribed rule determines the quantity of water to be provided for the necessities of the prisons. The plan above mentioned limits itself to recommending in all prison constructions, as an indis-

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pensable prerequisite, a good supply of water, and, with rare exceptions, it is with abundance rather than parsimony that water is brought into all our prisons.

As regards the quality, prisoners are generally treated like the free population of the localities in which they are incarcerated. Among the establishments destined to their use, a great number are supplied with the same water which the neighboring cities or villages procure for their public fountains. The administration knows too well the influence which the water habitually drunk exercises upon the health of the prisoners not to take care that it be pure and healthful.

XXXVI. The ventilation of the prisons is made the object of a very special attention. The plan indicated below contains formal rules to this effect, among which are found the following:

The windows should have at least 1.2 meters in height to 1 meter in width on the ground floor, and 1 meter in height to .8 of a meter in width on the first floor.

The dormitories, workshops, and common apartments should be conveniently arranged and well lighted, and aired on two sides if possible, and should give at least 15 to 20 cubic meters of space to each prisoner, in addition to the special means of ventilation.

As regards these special means, those which are most effective consist of draught-chimneys, (*cheminées d'appel,*) placed at the top of the rooms to be ventilated, and working by means of small openings of some centimeters square made in the wall, so as to cause the miasms to escape and facilitate the renewal of the air.

For all the old constructions, in which the rules laid down in the above plan would be too difficult or too expensive to reduce to practice, the inspectors general carefully indicate, at the conclusion of their visitations, the improvements which they regard as necessary to a good ventilation. Almost all the observations hitherto made tend to show that in order most surely to attain this end, it is indispensable that openings be placed in the two parallel walls of each apartment destined to receive a large number of individuals. Thus it is sought as much as possible to make little openings, called barbacans, in the top of the wall facing the windows, which give light to each apartment. The results obtained by this simple arrangement, already almost everywhere adopted, are highly satisfactory.

XXXVII. The plan for the construction of departmental prisons, decreed in 1863, recommends corridors and stairs well lighted and airy, and the suppression of the dark subterranean passages. It prescribes that the floors of the several stories, especially for apartments in common, except the infirmary, be, as far as possible, covered with cement or stucco, in preference to flagging, tiles, or planks. The walls and ceilings are required to be carefully plastered and painted with oil, or at least washed with lime. These precautions, whose aim is to facilitate the maintenance of cleanliness, are completed by official measures, whose daily or periodical execution is placed in charge of the contractor of each establishment where the industries are managed by contract. These measures are specified in the contract. They consist principally in frequent and repeated sweepings, washings, and cleanings, as well as in fumigations, and in the annual whitewashing of all the buildings.

XXXVIII. The means of securing the personal cleanliness of the prisoners are of two kinds. The one, as the daily toilet, the bath, the washing of the feet, and the removal of the beard and long hair of the men, is applied directly to the individual. The other has for its object the linen and the clothing provided for the prisoners' use. They are both as extensive as possible, and are made the subject of numerous

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and detailed rules in the conditions of the contract and the regulations of the prisons. The same rules are applied in general to the female prisons and educational colonies for young girls, with the exception of the obligation to wear the hair short. Entire liberty of action is left with them in this respect.

The arrested and accused are subjected to no other obligations than those which are indispensable to the maintenance of good discipline, of general cleanliness, and of the health of their fellow-prisoners. They are permitted to keep their beard and their hair.

XXXIX. The central administration has long been impressed with the grave inconveniences occasioned by water-closets placed adjacent to the dormitories or other apartments occupied by the prisoners. As early as 1819 a decree of the minister of the interior, under date of the 25th December, bears traces of his attention to this matter. The fifteenth article decides, in effect, that measures shall be taken to protect the dormitories, and especially the infirmaries, from the infection of the gases emanating from the privies. He adds, that the *latrines* placed within the interior of the dormitories and cells shall be removed, and their places supplied by buckets, which are emptied and washed twice a day. The several essays, made since that period, have shown that whatever may be the precautions taken, whatever the system adopted, the privies are always an unhealthy neighborhood, and that the best plan is to have none at all, or at least to place them outside of the buildings; for example, in the space between the two encircling walls of the prison. These rules, which have been closely followed in the prisons recently constructed, have not yet been fully applied to the old prison buildings. The displacement of the privies involves considerable expense, from which, hitherto, many of the old establishments have recoiled. They have also, in considerable numbers, been retained in the exercise yards. But, as regards the introduction of buckets into the dormitories and workshops, the measure is now general, and is applied with satisfactory results in all the penitentiary establishments.

The removal of the privies, which still existed in the exercise yards in a certain number of establishments, is constantly going on, and a ministerial circular of the 20th of March, 1868, recalls the considerations of salubrity and security, as well as of decency, which recommend the suppression of the latrines in those courts.

XL. In the interest of good morals, as well as for the purpose of rendering supervision more easy, sundry regulations have prescribed the lighting, during the night, if not of the cells, at least of the common dormitories. This rule is applied to all of the penitentiary establishments. No particular mode of lighting is fixed upon absolutely. The administration reserves to itself the power of regulating it in each individual case, and it permits, indifferently, the use of tapers or lamps, either of oil or petroleum, or mineral essences. Gas is also sometimes used. However, according to the terms of the contract made for the central prisons, the contractor can use the mineral oils only on condition of conforming to such measures of precaution as may be prescribed to him. The necessary material must be furnished by him, and the supply renewed when necessary; and he is required to place in the dormitories small sheet-iron chimneys to carry outside the smoke of the lamps.

XLI. The heating of the prisons of every class is generally effected by means of stoves placed in the rooms which are to be heated. Some establishments, and those among the most important, are well furnished with heating apparatus, placed in the cellars or basements, which is designed to diffuse the heat throughout the several parts of the build-

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ing; but serious inconveniences, as well in regard to the expense as to the distribution of the heat, have caused an abandonment of the system.

A note which accompanies the plan already referred to resolves this question thus: "The hot-air furnaces have not hitherto yielded satisfactory results. The workshops and other places where the prisoners are in association can be more readily heated by simple stoves. It is the same with individual cells." The administration aims only to prevent the effects of excessive cold; in other words, to spare the prisoners the physical suffering which might react injuriously upon their health.

The contract for the service of the central prisons recalls, in articles 54, 55, and 56, the obligations which, in this regard, rest upon the contractor. The contract for the services of the departmental prisons contains the same enumeration in article 46. Finally, as regards the colonies of juvenile delinquents, the regulation of the 10th April, 1869, contains the following provisions:

ARTICLE 21. The schools and workshops shall be heated during six months of the year, viz, from the 15th October to the 15th April.

ARTICLE 22. The infirmaries and bath-rooms shall be heated for a longer period if the physician think it necessary.

XLII. Experience has shown that iron bedsteads are preferable to all others, and for many years they are the only ones whose purchase has been authorized by the administration for the departmental prisons, as well as for the central prisons, and the colonies of juvenile delinquents belonging to the state.

The bedstead, thus uniformly adopted for the whole of France, and which is to-day the only one recognized in the official regulations, is decreed in a note accompanying the ministerial circular of the 26th September, 1867, with this reservation, that the bottom in wire-cloth, designed to receive the mattress, must be replaced by an iron or sheet-iron lattice in prisons where paillasses were formerly in use. At the same time, in adopting definitively the model of a uniform bed for all the prisons, the administration did not intend that the then existing beds, of whatever style they might be, should be immediately displaced. On the contrary, it took pains to state, in a circular of the 20th of May, 1868, that this expensive change should be made gradually, and only as cases of absolute necessity for some change arose.

It follows from this that there are still found, in some prisons, traces of different kinds of beds, authorized prior to 1867, particularly by the general regulation of 1841, which had permitted, indifferently, the hammock, the bunk, and the iron bedstead. The work of transformation, pursued by the administration with prudence and economy, is already far advanced.

In the infirmaries the iron bedstead has long since been everywhere introduced. Larger dimensions are given to the hospital than to the ordinary bedstead.

XLIII. After having, formerly, consisted of loose straw, spread either on the floor or on camp bedsteads, the bedding of the prisoners has undergone, since the commencement of the century, successive ameliorations, which have brought it to the satisfactory state in which it is found to-day.

The complete bed of each able-bodied prisoner is composed of an iron bedstead, a mattress, or paillasse, a bolster, two sheets, and one coverlet in summer, and two in winter.

While the above-enumerated articles are of somewhat larger dimensions and a better quality for the sick than for those in health, there are added for the former a pillow and curtains. Moreover, they ought to

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have, and they have, both a mattress and a paillasse. These various articles, which are specified, with all the necessary details, in the contract, are supplied to the prisons of every class, with this single difference: that, in the central prisons, the mattress constitutes the bed required by administrative regulation, and is found everywhere; whereas in the other establishments the mattress or the paillasse is indifferently supplied; and, as a consequence, the paillasse is generally used in the houses of arrest, of justice, and of correction.

This lack of uniformity is owing, in great part, to the fact that the service in the central prisons has been, for a long time, in the charge of the state, while it has been only a few years since the charge of the houses of arrest, of justice, and of correction, has passed from the hands of the department into those of the state. Other reforms were pressing, and all that were needed could not be undertaken at the same time. Moreover, aside from the fact that sleeping upon the paillasse is sufficiently comfortable, if the straw is frequently renewed, it is perhaps the mode best suited to the constant changes occurring in the population of these establishments. It is readily seen how much easier it is to increase, at short notice, the number of paillasses, and how the care and preservation of the mattresses would add to the embarrassment at times when the greater part of the beds remain unoccupied.

XLIV. The hours of labor, of recreation, and of sleep are determined, for each establishment, by a special regulation, made by the prefect. But if the duty of regulating, in detail, the division of time in the different prisons, situated in each department, belongs to the departmental authority, the central administration does not any the less take care that differences of too material a character be not permitted to exist. Above all, it insists that the hours of labor imposed upon prisoners shall not exceed those of free laborers, viz, twelve to thirteen. In the case of juveniles, it is prescribed that the hours of work are never to exceed ten.

As a general thing, from twelve to thirteen hours are given to labor, from two to two and a half hours to meals and repose, and nine hours to sleep.

[N. B.—A question relating to prison dietaries was accidentally omitted from the list of interrogatories. The answer to such a question has been considerately introduced at this point, under the enumeration XLIV, *bis*, and is as follows:] The dietary of prisons for punishment is regulated on the following principle:

1. The food, gratuitously furnished to able-bodied prisoners, is limited to what is strictly necessary for the support of the vital forces. The renewal of the forces expended in labor is effected by means of supplementary food, furnished to the convicts out of the funds deposited to their credit, and principally out of the part which, according to the penal class to which they are severally assigned by their sentences, comes to them as the product of their labor.

2. The dietary ought, as far as possible, to have a certain repressive character, effected by the absolute exclusion of luxurious dishes and drinks, such as wines, spirits, &c.

Nevertheless, the food forming the usual dietary having given rise to some strictures, modifications were introduced into, in 1868, this part of the service.

The number of rations of soup furnished each day has been increased from one to two, with a view to facilitate the consumption of the bread ration. A greater variety of provisions has been supplied, and the number of meat rations has been advanced from one to two per week.

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The savings, realized in the making of soup-bread, have been such that the expenses resulting from the above-specified ameliorations have been increased only to a very moderate degree; that is to say, about one and a half centimes for each day of imprisonment.

The sanitary state of the central prisons has been essentially improved under the influence of the new dietary. This *régime* has proved highly satisfactory.

The distribution of bread is regulated as follows:

For each day when meat is furnished, (Sunday and Thursday,) 775 grammes for the men; 725 grammes for the women.

For the five days when meat is not furnished, 840 grammes for the men; 790 grammes for the women.

In addition to this, supplementary bread is furnished to those convicts who have no resources from their disposable *peculium*.

The bread for able-bodied prisoners is, in general, composed of two-thirds of bolted wheat flour containing one-eighth of bran, and one-third of bolted rye or barley flour containing one-fifth of bran.

On Sunday and Thursday there is a meat-ration consisting, in the morning, of a bowl of soup containing five deciliters (nearly a pint) of broth, and, in the evening, 75 grammes on Sunday and 60 grammes on Thursday, of cooked meat without bone, together with a small quantity of (at least) three deciliters of rice or potatoes.

On each of the other days of the week, the ration consists of two bowls of soup, without meat, containing four deciliters, with the addition, at the evening meal, of at least three deciliters of potatoes, peas, lentils, or beans.

The expenditures for supplementary provisions purchased by the prisoners amounted, in 1867, to 692,181 francs, being an average of about ten centimes a day.

The supplementary provisions delivered gratuitously by the administration or the contractors, represent, in addition, another expèditure of 57,980 francs, equal to 1.094 centimes for each day of imprisonment.

During the summer, there is distributed to the prisoners a hygienic drink, made after a formula laid down in the contract.

The dietary of the houses of arrest, of justice, and of correction is regulated agreeably to the principles above set forth in relation to the central prisons; but some modifications are made in the details on account of the small number of the prisoners.

In the colonies of juvenile delinquents, bread is given *ad libitum*. The number of meals in these establishments is three a day, and even four in time of harvest, during which rations of wine, beer, and cider are given.

The principal exceptions to the dietary arrangements just described relate—

1. To the prisons of the Seine, where, in respect as well of the quality of the bread as the quantity of the meat and other commodities, the rations differ not a little from those of the central and departmental prisons.

2. To the agricultural colonies of Corsica, where we have had to contend with climatic influences by toning up the dietary with supplementary additions of meat, and with rations of coffee, and even of alcoholic drinks.

It belongs to the ministry of the navy and the colonies to give exact instructions on the subject of the dietary of the prisoners sentenced to the bagnios.

XLV. In the great prisons for punishment, the sick prisoners are al-

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ways treated in the establishment, whatever may be the nature or gravity of their disease. Exception, however, is made of the epileptics and the insane, who are sent to special establishments.

In the houses of arrest, of justice, and of correction, sick prisoners are, as far as possible, treated in the prison. There is a special apartment designed to serve as an infirmary. A physician belonging to the town is employed for the prison, and is required to make one visit daily for the purpose of giving attention to the sick. To these a better dietary is allowed. The prescriptions of the doctors, limited, it is true, in a certain degree, are always carried into effect. In prisons of less importance, only the lighter ailments are treated. As soon as a prisoner becomes seriously ill and has need of special care, he is conveyed to the hospital of the town. The expenses of his treatment there are reimbursed to the establishment by the state or the contractor.

The sanitary system of the central prisons is organized in a manner the most complete. A physician, often resident in the establishment, is attached to each. The infirmaries are arranged in the best possible manner. A special dietary is accorded to the sick, agreeably to the prescriptions of the physician and the conditions of the contract. A dispensary, provided with all necessary medicines, is organized in each central prison, and an apothecary is charged with preparing the prescriptions.

In the public colonies of juvenile delinquents, the sanitary service is organized, in the main, as it is in the central prisons.

There are also infirmaries in the private colonies, and a physician attached to the establisement must make at least three visits a week.

XLVI. In the houses of arrest, of justice, and of correction, the stay is too short for the imprisonment to produce any appreciable influence on the sanitary state of the prisoners. The pathological condition of the prisoners, before their incarceration, is the principal cause of the diseases which are developed after their imprisonment. It may, therefore, be said, as regards these prisons, that the diseases most common are the same as those which affect the free population of the locality from which the prison population is recruited.

A certain number of diseases developed in the central prisons are in like manner due to the sanitary state of the prisoners, who, at the time of their commitment, have already felt the effects of debauchery and misery. It is, nevertheless, possible to perceive, in a certain measure, the inevitable influence of the privations undergone during incarceration. It is affections of the digestive and respiratory organs and fevers which furnish half, and often two-thirds, of the inmates of the infirmaries in the penitentiary establishments for both sexes.

It is certain that imprisonment very generally produces a lack of blood, and this favors the development or the gravity of certain affections, such as phthisis and scrofula. As regards ailments which, without being of a grave character, still render necessary the intervention of the physician, it may be said that gastric complaints most frequently require treatment in the infirmary. In establishments designed for juvenile delinquents the most frequent affection, brought generally from without, is scrofula. That which produces the greatest ravages is pulmonary consumption. Fevers come next.

XLVII. The average number of prisoners in the infirmaries compared with the total prison population was, in 1868, in the central prisons, 4.05 per cent. of men and 5.16 per cent. of women; and in the establishments of correctional education, 1.61 per cent. of boys and 2.23 per cent. of girls.

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XLVIII. In comparing in the various penitentiary establishments the average annual population with the number of deaths for the same time, the following percentages are obtained:

Houses of arrest, of justice, and of correction.—Men and boys, 3.79 per cent.; women and girls, 4.91 per cent.

Central prisons.—Men, 3.65 per cent.; women, 3.80 per cent.

Establishments of correctional education.—Boys, 1.67 per cent.; girls, 2.20 per cent.

XLIX. Penal labor, properly so called, does not exist in the prisons of France. The penal system is no longer founded, as formerly, on suffering and terror. Corporal punishments have disappeared from the penal system. What is desired at present is to punish the criminal; what is sought as the end of that punishment is his reformation. Therefore, industrial labor alone is found in the prisons, obligatory in the case of those under sentence, permitted in the case of the arrested and the accused. This character of *obligation* may well be considered as a punishment to the convict, and a means of lessening the expenses caused by him to society; but it is thereby sought, above all, to prevent the dangers of idleness and to form the taste and the habit of labor.

In the smaller houses of arrest, of justice, and of correction, there is difficulty in organizing the labor. The prisoners are engaged only in temporary occupations. A few, when that is possible, follow the trade by which they obtained a living outside. It is only in the larger departmental prisons that it has been possible to establish workshops of any importance.

In the central prisons the labor is thoroughly organized; if any are without occupation, it is the exception and not the rule. Large industrial workshops in these establishments continually present a scene of busy toil. Different industries, to the number of fifty or sixty, have been introduced into the male central prisons. The principal are shoemaking, the manufacture of hosiery, weaving, button-making, cabinet-work, lock-smithing, the manufacture of hardware, tanning, &c., &c.

There are, besides, three establishments in Corsica, and one in Belle Isle, in which the prisoners are engaged in agricultural labors.

Sewing, which can be applied to very different kinds of work, is almost the only industry pursued in the female central prisons.

Remuneration by the day is the exception, and is applied only to the interior services of the prisons. Piece-work is the general rule. With a view to avoid the competition of prison-labor with free labor, the rates of payment for the work done have to be studied and regulated by the administration, which carefully considers before-hand the different interests involved. The rates must be the same as those paid to free industry for the same kinds of labor; only there is made to the contractor a remission of 20 per cent., or one-fifth, to indemnify him for special expenses, which manufacturers outside do not have to incur. As regards minors of both sexes, subjected to the system of correctional education, they are required to be principally employed in agricultural labors.

L, LI, and LII. Penal labor does not exist in France.

LIII. In all the houses of arrest, of justice and of correction, in France, except those of Paris, the supplies of food and of other current necessities are confided, by way of contract, for three, six, or nine years, to a distinct contractor for each department, and on conditions mutually agreed upon. This contractor has the sole right to make the prisoners work; his interest compels him to that, since he shares about one-half of the product of their labor. This product comes in to lighten his expenses;

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but as the labor of these prisons cannot be so well organized as that in establishments for long punishments, and is, consequently, in them less productive, the cost of each day's imprisonment is greater than in the central prisons.

In the central prisons of the continent, with the exception of that of Belle Isle, which is administered by the state, the right of employing the labor of the prisoners is, in like manner, conceded to the general contractor of the services.

The administration reserves the right of utilizing the labor of the prisoners if the contractor leaves them unoccupied.

The directors of the private colonies employ, in industrial labors, without the intervention of contractors, those juveniles whom they have not been able to employ in agriculture.

The product of the labor of the young girls applied to field-labor or sewing is received by the religious communities charged with their penitentiary education.

LIV. The system which consists in awarding to contractors the profits of the industrial labor of the prisons appears to be the preferable one. If the state can produce more, it produces, in general, at greater cost. Personal interest and the desire of making money are powerful motives with the contractor; besides which, an officer of the government has not the same freedom of action nor so much practical knowledge of commercial affairs as a business man. Moreover, by giving to the same person the charge of the maintenance of the prisoners and a part in the product of their labor, the administration has realized a progress promotive of the interests of all. In proportion as the contractors have become familiar with the working of their contracts, they have learned that the surest benefits to be realized from them consisted rather in the impulse to and extension of industrial labor, than in the culpable profits to be obtained by the imperfect execution of the obligations which they had assumed. The labor being constant and becoming more and more productive, the profits of the contractor and those of the prisoners increase *pari passu*. The part of the product of the labor belonging to the contractor represents a profit more considerable in proportion as such product increases. The sum, then, to be paid by the state toward the maintenance of the prisoners becomes so much less when a new contract is to be made. The contractors have been made to comprehend that the sum total of the product of the labor is augmented, as the result of the general good care extended to the prisoners. This last result, conducive alike to the well-being of the prisoners and the interest of the treasury, is remarkable and immediate when the contractor directly utilizes the forces of the prisoners.

LV. Under reserve of the exception previously pointed out in what concerns the prisons of Paris, there is but one system of contracting the labor of the prisoners. The contractor, charged with the service of maintaining and feeding the prisoners, possesses the exclusive right to the labor of the convicts. The contractors in the departmental and central prisons themselves utilize directly the labor of the prisoners; those in the prisons of Paris do it through sub-contractors, for whom they become responsible to the administration.

The procedure which consists in the direct utilizing of the labor by the contractors has its advantages, which have been pointed out in the preceding paragraphs; but if it is, in certain respects, advantageous to the prisoners that the contractor be directly interested in the greater or less production of the labor, this state of things may be attended with some disadvantages. In effect, if the contractor is, at the same time, a

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manufacturer, it is probable that the greater part, if not all of the prisoners, will be placed upon a single industry, viz, that which he carries on outside.

When, in these conditions, a suspension of work happens, almost the entire prison population may have to suffer from this interruption of labor. If, on the contrary, the contractor has sub-letters for the various industries, any partial suspension will affect only a small number of prisoners, and, on the other side, the prisoners belonging to a shop which has suspended labor may pass, temporarily, into another shop, where they will be occupied.

LVI. Of the inmates of the central prisons, the men who had no regular calling or business prior to commitment were 4.78 per cent.; the women, 11.76 per cent.

In the establishments of correctional education, where the children are often placed, before having exercised any regular calling, either because of their youth or the indifference of their family, the proportion not having any regular business is about 65.61 per cent.

XVII. All the convicts are under obligation to labor. Each one is put, as far as possible, to the business which he followed before his imprisonment; and, when he is placed in a workshop, account is always taken of his aptitudes and tastes.

The prisoners of rural origin are, in general, sent into the agricultural establishments of Corsica, when the state of their health and the length of their sentence justify so expensive a transfer.

In the establishments of juvenile delinquents it is sought, above all, from considerations of health, and in the hope of teaching them a business which may keep them away from the cities, to employ them in agricultural labors. Yet those who will be able to return to their family, and who are of city origin, are employed in industrial occupations, which they may exercise after their liberation.

LVIII. As has just been said, the administration exerts itself, as far as possible, to cause to be taught to the prisoners, previously without regular business, some calling, which will enable them, after their liberation, to gain an honest living. But, during their incarceration, they may already aid themselves by work. Not to repeat what was said in No. XIII, on the share accorded to prisoners of the product of their labor, it is sufficient to recall the fact that they can, during their imprisonment, avail themselves of their disposable *peculium* to ameliorate their condition, in respect of food or clothing, and to procure for themselves certain objects, the use of which is authorized by the regulations.

As regards the second part of their possession, the reserved *peculium*, which they can diminish during their imprisonment only on certain conditions, and to a limited degree, it is a kind of savings, designed to meet the first necessities of the liberated prisoner, if he does not find work immediately on his discharge from the establishment.

This resource is thus a means, prepared by his own efforts, during his incarceration, to aid himself. The administration, not limiting itself to this forecast, has still further taken means to prevent this reserved fund from being expended as soon as it comes into the possession of the prisoner. It has conceived that, on emerging from a prolonged state of affliction and restraint, the prisoner, finding himself in the possession of a sum relatively considerable, would be disposed to waste it immediately in debauchery. It therefore places at the disposal of the liberated prisoner only such sum as may be necessary for the expenses of his journey, and he can touch the rest of his possessions only after arriving at the residence which he has chosen, or which has been assigned him. As

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regards juvenile delinquents, whose labor is not remunerated so long as they have not been restored to freedom, except in case of being placed with farmers,* they receive, on their discharge, a complete outfit, and money enough for their journey.

LIX. The English and Anglo-American legislations are so unlike ours that it would be difficult to say, precisely, to what infractions in penal matters the words "minor offenses," employed in the question, are to be understood. Besides, certain infractions which are made the objects of prohibitions by foreign laws have no penal sanction in France, such, for example, as the observance of the Sabbath, public drunkenness, &c.

Nevertheless, in order to enter as much as possible into the sense of the question proposed, it would seem that it must refer to criminal acts of but a moderate gravity, which, according to the provisions of the fourth book of the French penal code, may be punished either by a fine of fifteen francs or less, or by an imprisonment of fifteen days. These acts are those which, in the exposition of "incentives" in the code of 1810, the reporter designated "violations of police regulations," and which the first article of the penal code has denominated "contraventions."

The contraventions are numerous, and it is certain that the penalties attached to them do not, from their very triviality, prevent a return to the offenses against which they are directed, whenever their authors find in them any profit, the gratification of some grudge, or even a passing diversion. These transgressions, often committed by the same persons, are no doubt vexatious, and it must certainly be admitted that respect for law is less profound in France than in England, for example; but if the trivial faults, denoting in those who commit them a certain levity of character, are often repeated, in spite of the punishment with which they are visited, it cannot, on the other side, be alleged with truth that graver offenses, constituting a misdemeanor or a crime, are more numerous in France than in other countries.

It is presumed that, in the thought of the author of the questions, the words "minor offenses" ought to correspond, in France, to those of "contraventions," which are punished with a light imprisonment.

If, on the contrary, they answer to misdemeanors of no considerable gravity, and are visited, consequently, with a trifling penalty, it might be said that, in this matter as in that of contraventions, though in a much less proportion, the first strokes of the penal law do not prevent a return to the criminal acts. Thus, in the year 1870, out of 160,129 previously convicted offenders, arraigned before the correctional tribunals, 46,441, that is, 25.23 per cent., had been previously punished, to wit: 7,858 by fines, and 38,783 by an imprisonment of one year and under. The relative smallness of the first punishments had not, therefore, in this case, had the salutary effect of preventing new offenses.

LX. In respect to the percentage of recidivists: In order to reply more fully to the spirit of the question upon this point, it will be necessary to take into view both the prosecution and the conviction.

According to the last official report on criminal justice, out of 4,189 individuals prosecuted for crimes, the recidivists are in the proportion (including men and women) of 1,780, that is to say, 42.49 per cent. Of this number of recidivists prosecuted, 272 were acquitted, being 11.91 per cent. only.

On the other hand, of 160,079 individuals of both sexes prosecuted for misdemeanors, the recidivists are to the number of 60,129, or 37.56

*They have a right in that case to the moiety of their earnings.

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per cent. Of this number of 60,129 recidivists prosecuted in matters of misdemeanor, 1,725 only were acquitted, being 2.26 per cent.

LXI. A relapse, in the legal sense of the word, is the commission, after a penal sentence, of a new criminal act. It receives little favor from the French law. The circumstance of a prior conviction, and the greater perversity shown by a repetition of the offense, seems, in effect, to demand from the legislator an increase of punishment. Doubtless, neither theft nor homicide changes its nature because committed a second time; but a crime has two elements, the substance of the act and the criminality of its author. The legislator has thought it a duty to take both these circumstances into consideration in measuring the punishment.

Article 56 of the penal code lays down rules in regard to relapses in matters of crime. The punishment awarded is *generally* that which is placed above the first sentence in the scale of penalties.

Article 58 relates to relapses in matters of misdemeanor. It ordains that misdemeanants, who had been punished correctionally by an imprisonment of more than a year, be sentenced, in case of a second offense, to the maximum of the punishment permitted by the law, and declares that this punishment *may* be doubled, besides subjecting the offender to the supervision of the police during a period of five years at least, to ten years at most.

The effect of a second or third conviction in diminishing the share accorded to the prisoners of the product of their labor has already been stated.

LXII. The law of the 22d of July, 1867, put an end to imprisonment for debt in commercial and civil matters, and in those in which foreigners are concerned. The restraint of the body exists no longer, except in matters criminal, correctional, and of simple police. The usage has just been re-established as regards the payment of moneys due to the State.

The ordinary creditor who, under the empire of the old legislation, caused his debtor to be imprisoned, (in the exceptional case of which mention will be made further on,) was bound to deposit in advance, for each period of thirty days, the sum of 45 francs in Paris, and of 40 francs in other cities, in the hands of the prison-keeper, to provide subsistence for the imprisoned debtor.

This consignment of the means of support was not, and is not now, necessary, when the debtor is arrested and detained on account of debts due to the State for the public administrations. This expense is, in such cases, included in the number of expenses necessitated by the service of the prisons, agreeably to the terms of the decree of the 4th of March, 1808, article 2, which was not abrogated by the subsequent laws of 1832 and 1867 touching the restraint of the body. In this case, the public minister is bound to take care that persons imprisoned for debts to the State or the administrations receive the same rations as the other prisoners who are in the charge of the State.

It is a special case, that in which the unfulfilled engagements of a citizen toward others may also draw after it his incarceration, agreeably to the terms of article 460 of the Code of Commerce. The decree of bankruptcy may order the placing of the person of the bankrupt in a debtor prison, and, if there is no such prison, in a part of the house of arrest reserved for that purpose. This is a measure which prudence almost always dictates. If the debtor is simply unfortunate, a safe conduct soon restores him to his family and to liberty; if the examination

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of his conduct justifies rigorous measures, it will be impossible for him to liberate himself by flight.

The arrest and imprisonment of the bankrupt should be preceded by the consignment on the part of the commissioners of bankruptcy of the means of living, and, in case of insufficient means for this purpose, the advance of the moneys to be consigned is made from the public treasure, on the order of the commissioner, given at the request of the public ministry. (*Code de Commerce, article* 461.)

The French law, as is thus seen, places the incarcerated bankrupt in a situation altogether different from that of ordinary prisoners.

LXIII. This question asks for an opinion as to the principal sources of crime in this country. The absolute terms of this question render a categorical reply impossible, but there is reason to believe that in France, as in many other countries, the insufficiency of moral education, the general defect of intellectual culture, and the want of an industrial calling, not opposing to the appetites and instincts a barrier sufficiently strong, leave an open road to crimes and misdemeanors. These offenses are afterward modified and perpetrated under influences springing from the circumstances by which their authors are habitually surrounded.

It is thus that, on the frontiers, the populations, seeing in the code of fiscal laws only an enemy of natural right, have little hesitation, for the purpose of avoiding the payment of taxes, to sacrifice the lives of the agents charged with collecting them. In the cities the laborer, seduced by ideas of a luxury which his labor does not and ought not to give him, suffers himself to be drawn on to attempts against property, and, too often, against social order. The inhabitant of the country, who has under his eyes only the spectacle of a productive soil parceled out to infinity by the law of inheritance, demands violently, sometimes even at the cost of his neighbor's life, the enlargement of the patch that belongs to himself.

To these evils, of which France has no monopoly, does there exist a remedy which will prove absolute and complete? It may be doubted; but it is certain that, in elevating morality, in fortifying the heart, in enlarging the boundaries of knowledge, the practical ability of men would be increased, and the effects of these evils would be diminished by lessening their causes.

Certain humanitarian or economic writers have, in these latter times, seen in misery the supreme cause of criminality. They have rested their theory upon this statistical consideration, that the years most prolific in violations of law were precisely those in which the harvests were least abundant. We might say as much of the periods which correspond to the interruption of the great industries of the country, and, in a sense more restricted, of the effects of legal supervision over the persons who are subjected to it. But these are only accidents or influences which, at most, are but intermediate causes, subordinating themselves, in a manner little short of absolute, to the generic causes set forth above.

LXIV. As regards the proportion in which the sexes are represented in our prisons: On the 31st September, 1868, a point at which were arrested the indications of the statistical documents, recently published, on the subject of the movement of the population in the central prisons and the houses of arrest, of justice, and of correction, there were counted in all the different establishments: 33,978 men, being about 81 per cent. of the total population; and 7,993 women, being about 19 per cent., subdivided in the following manner:

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Central prisons.

Men sentenced to reclusion and to an imprisonment of more than one year, 15,467, or about 82 per cent. of the population of the central prisons.* Women sentenced to hard labor, to reclusion, and to an imprisonment of more than one year, 3,506, or about 18 per cent. of the population of the central prisons.

Houses of arrest, of justice, and of correction.

The arrested, the accused, and those sentenced, for the most part, to an imprisonment of one year, and less: Men, 18,511, or about 80 per cent. of the population of the departmental of prisons; women, 4,487, or about 20 per cent. of the population of the same prisons.

In recapitulating the statements relative to persons imprisoned under whatever title in the prisons, in the penitentiaries, in the public and private colonies, as well as at the bagnio and in the countries devoted to transportation, the following is the grand total for the year 1848: 69,469 men, (adults and juveniles,) or 87 per cent. of the total of population; 9,612 women, (adults and juveniles,) or 13 per cent. of the total population.

It is proper to remark, in regard to the classification of the prisoners in respect to the sexes, that the women commit in prison, as in free life, fewer moral offenses and breaches of discipline. They observe better and more readily the requirements laid down in the regulations.

The proportional number of recidivists is also very sensibly less for the women.

LXV. The studies prosecuted in France with a view to organize a penitentiary system, as well as the modifications more recently introduced into the great prisons for punishment, have generally for their object, besides the reformation of the prisoners, the intimidation of criminals and the gradual repression of crime.

It could not, indeed, be otherwise. The doctrines of penal law are based upon the necessity of protecting society and of inflicting on criminals a punishment proportioned to the gravity of their offense, at the same time having regard, as far as possible, to certain principles of humanity.

The moral regeneration of the convicts is, therefore, considered in rance as one of the means of action which the state can and ought to employ to diminish the dangers of relapse, but not as the principal aim of the penitentiary system.

LXVI. It is asked whether, as a matter of fact, the prisoners leave the prison-house better or worse than they came in. It is very difficult to obtain favorable results in the case of prisoners sentenced to a short term in prisons where the associated system prevails.

Whoever has been imprisoned in these circumstances becomes sensibly deteriorated: on the one side, by contact with criminality; on the other, by the very influence of a punishment of which he no longer fears, in the future, the physical and moral consequences. In regard to the greater part of the prisoners of this class, the danger to society and to the individual is greater after than before his imprisonment. It would be desirable to modify, on this point, the sanction given to the awards of justice.

* Certain men sentenced to hard labor are exceptionally retained in these establishments.

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It should be remarked, in support of this view, that the number of relapses is in inverse ratio to the duration of punishments. After the lapse of a certain period the prolonged action of a sojourn in the prisons makes itself advantageously felt.

LXVII. There are not yet, in France, institutions specially created to aid liberated prisoners in finding work, and in this manner to save them from falling back into crime. We can only cite, as exceptions to this, certain establishments whose creation is due to the private initiative of members of the clergy and of the Sisters of the Order of Mary-Joseph.

The Abbé Coural, founded in 1842, near Montpelier, under the title of Solitude of Nazareth, a refuge designed for the liberated females of the south. The Sisters of Mary-Joseph, in imitation of this example, have founded seven other refuges, near the central prisons, for women.

To the present time there is only one establishment of this kind for men—the Asylum of Saint Leonard, at Couzon, (Rhone.)*

The administration is earnestly engaged in seeking the means to increase the number of institutions similar to those of which we have just spoken.

A commission, of which we shall speak further on, relating to the patronage of liberated prisoners, was organized by a decree of the 6th of October, 1869.

The labors of this commission were interrupted by the political events of last year. The inquiry conducted under its direction has, however, gathered very important information, which will soon be published. This commission is about to be re-organized.

A reform of considerable importance has already been effected in one of the points indicated by the commission, as creating an obstacle to the return of liberated prisoners to normal conditions of existence. A circular of the minister of justice has just re-established, in the case of persons subjected to legal supervision, the system in vogue prior to the year 1851. Henceforth liberated prisoners of this class will be known only to the administration, and, with the exception of certain great cities in which they are forbidden to reside, they are at liberty to choose the place of their abode. They are now able to escape the difficulties resulting especially from prejudices, salutary perhaps as far as public morality is concerned, but very prejudicial to them—prejudices which oppose their admission into workshops, or their employment on farms, and, consequently, their return to well-doing by the path of labor.

LXVIII. Besides the houses of refuge mentioned above, and the two patronage societies for liberated Protestants of the two sexes, there are not, in France, special patronage societies for liberated adults.

The liberated juveniles of the department of the Seine are placed under the patronage of a society which facilitates their admission to provisional liberty, and aids them in acquiring a trade.

A commission instituted, in virtue of a decree of the 6th October, 1869, was charged with studying all the questions relating to patronage, and with determining the measures adopted to facilitate the return of discharged prisoners to free life.

It seemed necessary to inquire especially: 1. Whether there are differences to be made between classes of prisoners, (correctionals, reclusionaries, and those sentenced to hard labor.) 2. Whether the commissions of supervisions of the prisons ought to be placed over the work of patronage, and, if so, whether it would be proper to leave to them the

* The results of the refuges devoted to women are good. Those obtained at the asylum at Saint Leonard are relatively less satisfactory.

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free use of the *peculium* accumulated as a reserve for the prisoner during his imprisonment. 3. Whether the action of patronage can be fortified by the adoption and vigorous use of arrangements analogous to the system of preparatory liberations.

It is placed out of all doubt that the organizations of patronage will present, in certain cases, great difficulties; but they cannot be insurmountable. The various objections raised, hitherto, to this eminently social creation ought not to arrest the efforts of the administration. The inquiries made by the commission on this subject have shown that, with the co-operation pledged, from various quarters, toward the accomplishment of this work, a patronage, widely extended, ought to offer more advantages than disadvantages.

LXIX. The punishment of imprisonment in association, in different degrees, is applied in France under different conditions, on which account it has been found necessary to give attention to the nature and condition of the buildings which have been successively placed at the disposal of the administration of prisons.

The system of cellular imprisonment has not been practiced to any very great extent, except in certain establishments devoted to the treatment of prisoners awaiting trial.

France was on the point of adopting a penitentiary system homogeneous in all its parts and based, in principle, on the processes employed in America to secure personal separation, but, at the same time, softening the rigors inherent in this mode of imprisonment, and under the reserve of a proportional reduction of the duration of the punishments.

The legislation which had been directed to this end, and was upon the point of realizing it, was interrupted by the revolution of 1848. Since that time the cellular system has been made the occasion of very severe strictures, at least as regards punishments of a certain duration; and it is consequently probable that there would have been, on this point, important modifications in the details, whenever the system should have been definitively adopted.

To sum up, France has not yet adopted a well-defined penitentiary system.

The administration, shut up to its own resources, has been able to devote itself to reforms, certainly of great importance, relating to the economic *régime* and the organization of labor, order, and discipline. In these respects, the central prisons and the greater part of the houses of arrest, of justice, and of correction, may be placed in the first rank.

It seems difficult to secure greater regularity in the mode of administering these various services; but it is certain that the results obtained are not such as they ought to be, if the question is received in relation to moral reformation. It is impossible, then, to declare ourselves satisfied with institutions which, upon the whole, fail to secure the gradual repression of crimes and misdemeanors, and whose results are unsatisfactory in regard to the number of relapses, which is, to say the least, always far from inconsiderable.

To state with precision the defects of the penitentiary system in France would require explanations far beyond the plan of the present report. For the rest, these defects are similar to those which exist in all countries where imprisonment has been substituted for the various penalties previously in vogue. A complete examination of the question would, moreover, necessitate a scheme for the revision of the penal laws.

Under the reserve implied in these observations, we will confine our-

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selves to pointing out the reforms and the ameliorations to be introduced in France, into the penitentiary system, that is to say:

1. The abolition of the punishment of imprisonment for offenses of little gravity, in place of which should be substituted, as far as possible, pecuniary penalties, the temporary privation of certain civil rights, &c.

2. The definitive choice of a system of imprisonment for prisoners awaiting examination or trial, and for those sentenced to punishments of a duration of at least two years. The system of personal isolation, mitigated by labor, reading, visits, &c., and above all a proportionate diminution, more or less considerable, of the duration of the punishments, ought of themselves, it would seem, to be efficacious and salutary for the prisoners belonging to these classes.

3. The adoption of a penitentiary system, applicable under different degrees of severity, to—1. Correctional convicts sentenced to a punishment of two years and over—2. Reclusionaries—3. Persons sentenced to hard labor.

A large number of publicists and specialists recommend, for punishments of a long duration, and above all in the case of recidevists, the adoption, on a large scale, of the system of transportation, and in all cases, the progressive substitution of agricultural for industrial labors.

It is important to remark, nevertheless, that hitherto transportation has always occasioned excessive expenses, and that most frequently the punishment of hard labor, thus applied, has a less intimidating effect upon criminals than an imprisonment of long duration in the central prisons.

[N. B.—The agricultural colonies, established in Corsica, present similar inconveniences.]

4. The organization of patronage societies, to which liberated prisoners may have recourse on their discharge from the penitentiaries.

II.—BELGIUM.

[Translation.]

I. All the prisons of Belgium are under the jurisdiction of the minister of justice.

The penitentiary of Louvain has a commission charged with the inspection and suspervision of that establishment. There are also commissions charged with the general supervision of the other prisons, and constituting administrative boards, invested with the right of investigating and redressing abuses, of proposing and introducing reforms to the advantage of the service, of granting to the employés leave of absence for five days, and of imposing upon them certain disciplinary punishments.

II. Near the tribunals of primary jurisdiction are houses of arrest for prisoners awaiting examination; near the courts of justice for prisoners awaiting trial; near every court-martial there is a provostal prison for military prisoners awaiting examination or trial. In all the houses of arrest are found apartments for the punishment of convicts not sentenced to the central prisons.

Juveniles of both sexes acquitted as having acted without knowledge, and placed under the care of the government for a definite period, are sent to houses of refuge.

III. Of the twenty-six prisons in the kingdom, eighteen are conducted

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upon the cellular system, not including two cellular wards in the city of Brussells and in the central prison of Ghent. Of the six congregate prisons, four are undergoing alterations to adapt them to the system of separate imprisonment.

IV. [For answer to the fourth question, which calls for the results obtained by these two systems, the reply of the government refers to a report made to the minister of justice by the administrator of prisons on the 31st of December, 1869, for the examination of which report there has been no time. The writer of the official reply having made this reference, goes on to say:] The Belgian legislature has given its preference to the cellular system, because it renders repression more efficacious, and because the reformation of the convict is thereby better assured.

V. The funds needed for the support of the prisons are derived from the same source as the funds required for the other departments of the public service.

The cost of each day's support is counted in gross, without taking account of the product of the prison labor, which is turned over to the treasury.

VI. The appointment of the directors and assistant directors is by royal decree. The other functionaries and employés of the prison are named by the minister of justice.

There is no limit to the tenure of office; it belongs to the government to judge whether the functionary ought to be retained or dismissed.

VII. The chief of a penitentiary establishment ought to be thoroughly acquainted with all the machinery of the service, whether relating to the moral, disciplinary, economic, or industrial administration. He should be able to conduct the government and discipline of the prison without extraneous aid, and to understand that the care which he is obliged to give to the material part of his establishment ought not to be to the prejudice of the zeal due from him to the moral part; and he should possess, in a high degree, the attribute of probity.

The director of a cellular prison, and especially of a penal cellular prison, has, so to speak, the charge of souls. He must be, at the same time, good, just, firm, intelligent, conciliatory; he must comprehend the whole extent of his duties; he must know men, and particularly criminals; he must be able to command respect and to secure submission to his authority from all without opposition. Above all, he must be animated by sentiments profoundly religious, for Christian devotion alone can sustain him in the path of his duty and give him the force and the perseverance necessary to overcome the obstacles which cannot fail to obstruct his progress.

The keepers are moral agents; they must, like all the other members of the staff, offer guarantees of morality, intelligence, zeal, and humanity. Their special service requires that they be in the vigor of their age, (they should not be admitted before the age of twenty-seven years;) that they have good health and a robust temperament; that they possess an energetic character; that they have a good primary education, and, if possible, the knowledge of one of the trades followed in the prison, so that they may be able to teach it to the prisoners.

Finally, they should have a complete and accurate knowledge of the regulations, whose practical application is confided to them.

VIII. Special training-schools are indispensable only for keepers, who generally enter on their functions without being prepared for the mission which they have to fulfill.

A school for keepers has existed for some years in the penitentiary of

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Louvain. The directors are recruited from the *personnel* of the administration, where, in passing through the different grades, they have necessarily acquired the requisite knowledge. Special examinations are a condition-precedent of their appointment.

IX. The pension granted to directors and employés who have become incapacitated for a further discharge of their duties is regulated upon the footing of the average salary of their last five years of service, a salary determined by the whole number of their years of service.

In regard to the pension allowed them on retirement, they are placed on the same footing as all the other functionaries belonging to the public administration.

X. The difference between prisoners sentenced to simple imprisonment, to reclusion, and to hard labor, is, the first are confined in houses of correction; the second, in houses of reclusion; the third, in convict prisons.

The duration of correctional imprisonment is from eight days to five years; that of reclusion, from five to ten years; that of hard labor, when the sentence is not for life, from ten to fifteen years, or from fifteen to twenty years. Of the product of their labor, there is allowed to correctionals, five-tenths; to reclusionaries, four-tenths; and to prisoners sentenced to hard labor, three-tenths.

The privilege of receiving visits, and of writing letters, is accorded to correctionals every fifteen days; to reclusionaries, once a month; and to those sentenced to hard labor, every two months.

XI. As regards the classification of prisoners: In the congregate penal prisons, the prisoners are divided into three classes.

The first class comprises prisoners whose antecedents are the most unfavorable, and whose conduct is bad. This class bears the name of punishment division, (*division de punition.*)

The second comprises prisoners whose antecedents, without being decidedly unfavorable and their conduct absolutely bad, have, nevertheless, need to be subjected to a probation, longer or shorter, before being definitively classed. This class has the name of probation division, (*division d'épreuve.*)

The third is composed of prisoners who, by their antecedents or their good conduct in the penitentiary, have claim to a special distinction. This class bears the name of recompense division, (*division de récompense.*)

These three classes, although subjected to the same *régime* and the same exercises, are nevertheless the objects of special distinctions. In order to be able to recognize the prisoners who belong to each, a distinctive mark in the clothing is adopted for each division.

The prisoners of the punishment division are subjected to the most painful labors, are deprived of the *cantine*, and suffer various privations, especially that of visits from and correspondence with the outside, except in urgent cases, which are left to the judgment of the director.

The passage from one division into another is determined by the administrative commission, on the proposal of the director. To this end the records of conduct and of punishment are consulted.

The examination for classification takes place during the first third of each year, unless oftener made necessary by exceptional circumstances resulting from overcrowding in one or other of the sections.

The numbers of the prisoners assigned to each division are inscribed on a roster suspended on the wall.

The first classification is made by the director according to the known antecedents of the convict on his entrance, the circumstances revealed

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on the occasion of his conviction, and the notes which are forwarded by the courts.

This classification is, so to speak, the only possible one in the great congregate penitentiaries; but to obtain solid results, in a disciplinary and moral point of view, it would be necessary to appropriate special wards to different classes.

XII. The regulations relating to the penitentiaries authorize the administrative boards and those of the inspection of prisons to address to the minister of justice propositions of clemency, or of reductions of punishment, in favor of prisoners who distinguish themselves by their good conduct, or who, as the result of special circumstances, seem worthy to be recommended to the royal clemency.

XIII. As regards the participation by prisoners in their earnings: Prisoners receive a part of the earnings resulting from their labor. This part is three-tenths for those sentenced to hard labor, four-tenths for those sentenced to reclusion, and five-tenths for those sentenced correctionally. This proportion cannot be increased.

XIV. Other awards decreed to good conduct, to diligence, to zeal and progress in labor and school, to meritorious actions of whatever kind, are the following: 1. Admission to places of trust, to domestic service, and to certain exceptional labors. 2. An increase of the privilege of visits and of correspondence. 3. Permission to make use of tobacco, in the form of snuff, or by smoking it, save that the use in this latter form is limited to the time of promenade in the exercise yards. 4. The grant of certain diversions and alleviations, such as the gift of books, of engravings, of tools, of useful objects, &c. 5. Propositions of clemency and of reduction of punishment. No. 3 applies only to cellular penal prisons; the use of tobacco is absolutely forbidden in the penitentiary of Ghent.

The most frequent violation of prison rules are, in the cellular prisons, communications or attempted communications, verbal or by writing. In the congregate prisons they are infractions of the rule of silence and traffic.

XVI. The following are the disciplinary punishments in use: 1. Privation of work, of reading, of gratuities, of the *cantine*, of visits, of correspondence, and of other indulgences granted in pursuance of the regulations. 2. A diet of bread and water. 3. Confinement in a special cell, or in a dark cell, with or without the bread and water diet. 4. The withdrawal of rewards which might otherwise have been granted.

XVII. All disciplinary punishments are recorded in a special register, together with the causes for which they were inflicted. The offenses committed and the punishments administered are also placed in the moral account opened with each prisoner.

XVIII and XIX. Chaplains are provided in all the prisons and for all religions. They preside at all the different services and exercises of worship, and over all religious instruction; they visit the prisoners in their cells and give them counsels and consolations; they urge them to a conscientious performance of their religious duties; they direct their pious readings; they hear their confessions, preach to them, give special instruction to those who are ignorant of the essential truths of religion, and fulfill toward them all the duties of their ministry.

XX. The government has always attached the greatest importance to religious instruction as a means of reformation, and has given to it the most complete organization possible, and every facility is given to the prisoners for the performance of their religious duties.

XXI. The administration has declared in the regulations relating to

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penitentiaries that it would encourage and facilitate the formation of associations of persons of both sexes, with a view to offer counsels and consolations to the prisoners, to watch over their interests and those of their families, and to facilitate their re-entrance into society. But no such association has yet been organized, nor has even any private person ever offered himself for the performance of such services.

XXII. Sunday-schools have never been established in Belgium. The administration has no need of such schools, because schools are held daily during the week.

XXIII. In regard to correspondence: Except by special authorization of the director in urgent cases, or when the privilege is granted as a reward for good conduct, prisoners can write or receive only one letter each every fortnight, when they are sentenced to correctional imprisonment; every month, when they are sentenced to reclusion; and every two months, when they are sentenced to hard labor.

XXIV. To the question, whether the correspondence of prisoners with their friends exerts a good or evil influence upon them, we reply: The effect is evidently good. It maintains or renews the ties of family, and exercises a favorable influence upon the prisoners. It also aids the officers in the study of their character.

XXV, XXVI, and XXVII. The prisoners are permitted to receive the visits of their relatives: father, mother, husband, wife, children, brothers, sisters, uncles, aunts, and guardians, on the production of a certificate granted by the local authority of the places where they reside, authenticating their identity.

No other visits are permitted except upon a written order of the superior administration, of the governor of the province, or of the president or one of the members of the commission specially delegated to this effect.

In the penal prisons more particularly, these visits take place in the conversation-rooms, in presence of a keeper. This employé observes the persons of the prisoner and the visitor, without interfering with the privacy of the interview.

The moral effect of these visits is generally good. There are rare cases, it is true, where such visits have produced an effect morally unfavorable.

XXVIII. More than one-half of the prisoners, that is to say, about 51 per cent., are able to read on their admission to the prisons.

XXIX. Every prison, with a population of fifty inmates or more, is provided with a school, properly so called, or with a teaching lecturer.

XXX. At the penitentiary of Louvain attendance upon the school is obligatory for all the prisoners, except on a dispensation for cause, granted by the director of the establishment.

At the penitentiary of Ghent, appropriated to a class of reclusionaries and of prisoners sentenced to hard labor, attendance at school is obligatory for all prisoners under thirty years of age; it is permitted to prisoners who have passed that age; but these latter, once admitted, can withdraw themselves from the school only with the assent of the administrative commission.

In other prisons provided with a school, attendance thereupon is obligatory, 1. For prisoners sentenced to six months and over, and those who have not attained their fortieth year; 2. For juvenile delinquents, whatever may have been the cause of their imprisonment. Attendance on the school is permitted to the other prisoners.

XXXI. The instruction given in the penitentiary schools includes: 1. Religion, which is taught by the chaplains, or under their immediate

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direction; 2. Morals; 3. Reading; 4. Writing; 5. Arithmetic; 6. Elementary notions of grammar, history, and geography, particularly the history and geography of Belgium; 7. The elements of geometry and linear drawing in their relations with trades; as well as other branches of a practical utility.

Great progress is made by the prisoners in these studies.

XXXII. Libraries are found in all the prisons of Belgium. They contain three classes of works, which meet three several wants—that of reforming the prisoners, that of instructing them, and that of diverting their minds by reading, at once entertaining, moral, and instructive.

XXXIII. The prisoners are very fond of reading, and spend much time in that employment. Their choice of books depends on their degree of instruction and education. The preference is generally given by them to works containing recitals and adventures of voyages, pictorial magazines, and some of the romances of Conscience, of Snieders, and of Dickens, the first two being Flemish authors. The influence of these readings is excellent, and the formation of prison libraries cannot be made with too much care and discrimination.

The prison library ought to embrace three classes of works: those of a pious and religious character, those of an instructive character, and those of an entertaining character, but having at the same time a moral and educational tendency.

XXXIV. The sanitary state of the Belgian prisons is good. The drains for waste water and night-soil are cleansed every week by a strong current rushing through them, so that no emanation dangerous to health can ever issue therefrom.

XXXV. As regards the water supply, each prisoner in the cellular prisons has daily at his disposal from 12 to 15 liters of potable water. The water supplied to the prisoners is of good quality.

XXXVI. The ventilation and heating of the cells being intimately connected, it will be proper to speak of both under the same head.

The apparatus for heating is placed in the cellar. The fire is made in the center of a double cylinder filled with water, which forms the boilers for its propulsion. From the upper part of each of these boilers two perpendicular pipes ascend into the principal ventilating conduits, and conduct the hot water directly into a special reservoir placed in the chimney (*cheminée d'appel*) appropriated to each apparatus. This reservoir is fed by six pipes, which traverse horizontally each range of cells, returning afterward, by the same passage, to the principal apparatus. Two pipes, filled with hot water, thus pass into all the cells. They are placed in a horizontal conduit running along the floor, close to the exterior wall. These conduits, covered with a plate of perforated iron, form for each cell a little reservoir of heat.

Thus the caloric is utilized just where its action is required, since it is precisely in the cells that it disengages itself, supplying each with an equal quantity. Its center of radiation is in the cell itself. Here is found the first divergence from the English system of heating, and the caloric cannot, as in that system, concentrate itself against the parvises of a great conduit situated in the basement.

Let us examine now the mode of introducing fresh air. This introduction is twofold. In the first place, there is inserted in the window a ventilator of 30 centimeters (about 12 inches) in height and 44 centimeters (equal to 17½ inches) in breadth, through which the fresh air is introduced directly into the cell, without having come in contact with the heat-pipes. Secondly, at one of the extremities of the iron plate which covers the conduits from the hot-air furnace is left an opening,

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which allows the heat to circulate in the cells. The opposite side of the plate corresponds to an opening made in the thickness of the exterior wall, by which the pure air from outside penetrates into the reservoir, and so into the cells. A valve is fitted to this last opening, by which the prisoner can regulate the introduction of air, and by the same means can increase or diminish the heat of the cell. Let it be carefully noted that the reservoir of which we have just spoken, as well as the introduction of fresh air, is on a level with the floor.

The vitiated air is drawn off by a conduit placed in the thickness of the wall on the opposite side from that on which air and heat enter. This conduit, at its upper extremity, leads into a great pipe, which runs horizontally under the roof, discharging its contents into a vertical chimney, at the bottom of which is situated the reservoir which receives the hot water of the furnace, whose smoke-pipe also traverses the chimney.

This system of ventilation works naturally and without mechanism of any kind.

XXXVII. The cleanliness of the prisons is insured by the following measures:

An active ventilation incessantly purifies the different parts of the penitentiary establishment, throughout which there is always diffused a fresh and agreeable atmosphere.

A cleanliness the most minute is continually maintained. The daily cleaning of the premises, the varnishing of the pavement of the cells by means of a special process, and the waxing of the floors and the pavements of the galleries, have made it possible to give up washing with water, which is attended with great inconvenience.

The walls of the cells, galleries, &c., are washed of a stone-color at the beginning of every year, and partially whenever it becomes necessary to remove spots or stains. No deposit of dirt or dung is allowed within the inclosure of the establishment, and all necessary measures are taken to have the rain-water speedily carried off from the premises. In summer, fumigations are made every morning. They are less necessary in winter, and are, consequently, less frequent during that season of the year.

XXXVIII. To insure personal cleanliness on the part of the prisoners the hair is required to be kept short; whiskers, moustach, &c., are forbidden. The men are shaved twice each week. The prisoners are required to wash their feet once a week. Every two months in winter, and once a month in summer, they are required to take a full bath. The body-linen is changed every week.

XXXIX. As regards the arrangement of the water-closets, two good systems are in use—movable vessels and fixed seats, with a pressure of water. This last deserves the preference, particularly in penal prisons.

XL. The cells are lighted with gas; two stop-cocks are fitted to the lighting apparatus—one in the cell, under the control of the prisoner; the other on the outside, under the control of the keeper.

The consumption of gas is 39 liters per burner each hour.

XLI. The system of heating has already been described.

XLII and XLIII. The use of the hammock has been given up, having been replaced in the cellular prisons by an iron table-bedstead. This bedstead is folded up during the day, contains the bedding, and serves as a table.

The bedding consists of a mattress, a bolster, two cases for the mattress, two bolster-cases, two woolen blankets, and two pairs of sheets. The mattress and the bolster are made of ten kilogrammes of sea-weed.

XLIV. [This question is answered by referring to the special regula-

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tions of the central prison of Louvain, which the commissioner has not had time to examine.]

XLV. With regard to the treatment of sick prisoners. The infirmary occupies a part of the building at some distance from the cells, and the sick are distributed into spacious cells, well aired and comfortably warmed. These cells have a capacity of 40 cubic meters, and are provided with the necessary furniture and with clothing suited to the condition of the sick. The dietary is regulated according to a special tariff. The hygienic service leaves nothing to be desired. A cleanliness the most minute, a ventilation active and continual, frequent fumigations, the change of linen and of bedding—in a word, all desirable attentions are accorded to the sick.

Independently of the assiduous attentions of which the sick are made the object, they are regularly visited, at least once an hour, and can, at any time, call upon the nurses by means of a signal, whose movement reaches to each bed. Prisoners seriously sick have watchers, and all the necessary measures are taken that they receive the attentions required by their situation.

Experience proves that prisoners are better treated in an infirmary cell than in a common infirmary.

When the service permits it, the doors of the cells are left open. In this arrangement there is a moral and physical advantage. The rule of separation, which is the foundation of the penitentiary system, is not violated; and the prisoners have not under their eyes, during their sickness, the spectacle of other suffering.

XLVI. The most common disease in cellular as in associated imprisonment is phthisis; deficiency of blood is equally frequent. Caries of the ribs and the sternum, diseases rare in free life, are frequent in that one of our penitentiaries which is not cellular.

XLVII. Regarding the percentage of the sick. We give the figures taken from the statistics of 1870:

Average population penitentiary of Ghent	754
Number of days spent in the infirmary	14,503
Average population penitentiary of Louvain	515
Number of days spent in the infirmary	1,157

All the prisons together, during the same year, furnished the following results:

Days of imprisonment	1,916,949
Days of sickness	52,554
Giving a percentage of	2.74

XLVIII. Death-rate. We give the figures taken from the statistics of 1870:

Average population penitentiary of Ghent	750
Number of deaths	37
Average population penitentiary of Louvain	515
Number of deaths	6

It is worthy of remark that prisoners sentenced to hard labor for life undergo their punishment in the penitentiary of Ghent.

The average aggregate population of all the prisons was: Prisoners, 5,251; deaths, 93; being a percentage of 1.77.

XLIX. Penal, as distinguished from industrial labor, does not exist in the prisons of Belgium.

The industrial occupations, expressed by the designations of the persons engaged in them, are: Scriveners, lithographers of autographs, office boys, dyers, winders, warpers, weavers' boys, weavers, foil-makers,

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cutters and tailors, menders, folders, hosiers, packers, shoemakers, bookbinders, joiners, turners, clog-makers, blacksmiths, tinmen, founders, masons and stone-cutters, masons' laborers, painters and glaziers, whitewashers, pit-sawyers, slate-quarriers.

L. We have no penal labor, properly so called. The law exacts work of persons sentenced to correctional imprisonment, to reclusion, and to hard labor. The employments introduced into the prisons are chosen, in preference, from among those which seem likely to afford to the prisoners after their liberation the means of procuring a livelihood.

It is our opinion that labor cannot be imposed as a punishment, for the first necessity of man in society, and, above all, of man in the lower classes, is labor, and the first sentiment to be developed in him is the love of work. To prevent crime in the honest population, or a relapse into crime of those who had been discharged from prison, in this consists the first guarantee of individual reformation and of social security. What would become of prisoners if they were restored to society with an aversion to labor? Is the hour of their liberation the time to say to them "Do you love work," when they have been taught to hate it? The liberated prisoner ought not to carry with him on his discharge from prison the idea that work is a punishment in this world, and that he has suffered it long enough during his imprisonment to hasten at the hour of his deliverance to free himself from his chains. Labor should be exhibited to him in the prison (as it is and ought to be in society) as the source of the physical and moral elevation of man. He ought, in all things, so to identify the life of man with the necessity and the attraction of labor that even in captivity it should be still, if not the image of happiness, at least a solace attached to its exercise and an idea of punishment from its privation. In a word, if labor ought to enter as a penal element into penitentiary imprisonment, it is not in the use but the privation of it.

Labor in penitentiary imprisonment ought to be obligatory; but it is an obligation which ought not to be imposed on the prisoner under the empire of constraint, but as an obligation to which his reason, his interest, his position, everything, ought to urge him.

LI and LII. For our opinion concerning the moral and sanitary effect upon the prisoner of penal labor, see the preceding answer.

LIII. The industrial labor of the prisoners is in part directed by the administration itself, and in part awarded to special contractors. These latter are placed under the immediate surveillance of the directors of the prisons into which they are admitted.

LIV. The contract system, such as it exists in our prisons, is that to which our preference would be given, as well because of the certain and great benefits procured by it to the treasury, as because of the facility which it offers of diversifying the labors of the prisoners and of affording them employments suited to their particular aptitudes.

Nevertheless, the system of working the prisoners by the administration itself offers also, in our organization, certain advantages, especially when it is a question of labor of easy execution, or of the creation of products for the use of the administration itself.

LV. Different systems of contracting the labor of the prisoners do not exist in this country. That which is in actual use consists in awarding the labor to a contractor who offers at the same time remunerative prices and adequate guarantees of solvency and morality.

LVI. From 60 to 70 per cent. of the inmates of our prisons had not, at the time of their commitment, any regular business or assured means of support.

LVII. The apprenticeship of the prisoners, in the different trades

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taught, is confided to the keepers of sections, under the special supervision and direction of the foremen. It follows that the keeper is not only charged with the supervision of the twenty-five prisoners of his section, and with the enforcement of the rules, but that he employs the greater part of the day in instructing the prisoner in some one of the branches of industry introduced into the establishment.

The mean duration of the apprenticeship is: twelve months for the shoemakers; six months for the weavers; and three months for the tailors. This time may be shortened by the aptitude or intelligence of the apprentices. As a general rule, the apprenticeship is terminated before the expiration of the date fixed upon, especially when, by dint of repetition, the prisoner has been made to comprehend the necessity of mastering a business, in order that, at the time of his liberation, he may be able to work for his food, his clothing, his bed—in a word, to assure the satisfaction of his essential wants.

Certainly it is important to effect the reformation of the prisoners, but it is important also to place them, on their liberation, in a condition in which they may gain an honest living by work, since it is an undoubted truth that ignorance of a business is the principal cause which urges the greater part of men to crimes against property.

The theory of reformation includes, therefore, the industrial education which gives to the prisoner the means of being, some day, sufficient to himself, and the religious and moral education which instructs him in his duties toward God and toward men.

LVIII. We regard it, as will already have appeared from the preceding answer, as a point of the greatest importance, that the prisoner, during his imprisonment, should master the art of self-help. To this end moral and religious conferences are held with him, and it is sought, by means of the knowledge of various kinds imparted to him, to put him into a condition of independence after his liberation.

LIX. The question relating to the effect of repeated short imprisonments, seeming to belong to a peculiarity in the legislation of the United States, the committee has judged it expedient to abstain from formulating a reply to it.

LX. As to the number of recidivists: Among the 795 prisoners committed, in 1872, to the central prisons, other than the establishment specially devoted to juvenile delinquents, figure 626 recidivists; that is to say, more than 78 per cent. This result evidently cannot be placed to the charge of the cellular system, since nearly half of the penitentiary establishments are still conducted upon the congregate system.

The report addressed to the government in 1869, which is hereto annexed, shows that the cellular system has considerably diminished the number of recidivists.

LXI. Recidivists are more severely punished than persons committed for a first offense, in proof of which are here cited articles 54 to 57 of the Penal Code:

ARTICLE 54. Whoever, having been sentenced to a criminal punishment, shall have committed a crime which subjects him to the punishment of reclusion, may be sentenced to hard labor from ten to fifteen years.

If the crime involves a sentence to hard labor from ten to fifteen years, the convict may be sentenced to hard labor from fifteen to twenty years.

He must be sentenced to seventeen years at least of this punishment, if the crime imports a sentence to hard labor from fifteen to twenty years.

ARTICLE 55. Whoever, after a sentence to a criminal punishment, shall have committed a crime punishable by an imprisonment of from five to ten years, may be sentenced to an imprisonment of from ten to fifteen years.

If the crime is punishable by an imprisonment of ten to fifteen years, the convict may be sentenced to an increased imprisonment.

He must be sentenced to seventeen years at least of imprisonment, if the crime is one that necessitates an increased imprisonment.

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ARTICLE 56. Whoever, after a sentence to a criminal punishment, shall have committed a misdemeanor, may be sentenced to a punishment double the maximum permitted by the law forbidding such misdemeanor.

The same punishment may be awarded in case of a prior sentence to an imprisonment of a year at least, if the convict shall have committed the new misdemeanor before the expiration of five years after having undergone his prescribed punishment.

In these two cases the convict may be placed, by the judgment or the arrest, under the special supervision of the police during five years at least, and ten years at most.

ARTICLE 57. The rules established in case of a relapse shall be applied conformably to the preceding articles, in case of a prior sentence, pronounced by a military tribunal, for an act defined as a crime or misdemeanor by the ordinary penal laws, and to a punishment authorized by those laws.

If, for said act, a punishment authorized by the military laws has been pronounced, the courts and tribunals, in judging of the relapse, shall have regard only to the minimum of the punishment, which the act, punishable by the first judgment, might have warranted, according to the ordinary penal laws.

LXII. Debtors' prisons still exist in Belgium, but they are empty cases of incarceration for debt have become very rare since the publication of the law of the 27th of July, 1871.

The treatment to which imprisoned debtors are subjected is not the same as that applied to criminals. They occupy a special series of cells, have the exclusive enjoyment of an exercise yard, and may communicate with each other, receive four visits a week from their relatives and from persons with whom they have business relations, and may correspond freely with the outside world.

LXIII. The principal causes of crime are, in the army, want of occupation, and the system of substitution.

In civil life, they are the oblivion of religious and moral principles, ignorance of duty, want of a business, the creation of factitious wants, drunkenness, libertinism, thoughtlessness, distaste of work, and idleness.

LXIV. The two sexes are represented in the Belgian prisons in the following proportions: men, 88 per cent.; woman, 12 per cent.

LXV. As regards the object of penal treatment: The administration seeks, above all, to reform those whose punishment is exacted by society; but it punishes without subjecting them to any physical suffering. The execution of the punishment has in view the double aim of expiation and reformation.

LXVI. Regarding the moral condition of prisoners on their liberation: It is in proof that in the cellular prisons the moral state of the prisoners is, in general, better at the time of their discharge than at that of their entrance. Those who manifest evil inclinations are few in number; nearly all have sensibly modified the sentiments with which they were animated at the time of their commitment.

LXVII and LXVIII. No prisoners' aid or patronage societies are found in Belgium; but the government has not lost sight of this important point. Efforts were made in 1848 to organize such associations; but, unhappily, the measures taken were not crowned with full success. While waiting, the administration seeks the best means for assuring to liberated prisoners an effectual protection, so as to prevent their falling back into crime. A special credit figures even in the budget of the department of justice, permitting the administrative commissions of reformatory institutions to extend aid to their liberated inmates.

LXIX. To the question whether we are satisfied with our existing penitentiary system, our reply is affirmative in so far as it is not applicable to establishments on the congregate plan; but the transformation of these into cellular prisons is actively progressing.

N. B.—The following table, appended to the report, contains in condensed form much interesting information regarding the model prison of Belgium:

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Penitentiary of Louvain.

	*1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	Total or average.
Convicts admitted to the penitentiary	326	264	321	316	221	344	420	242	337	252	310	3,027
Number of days of maintenance	22,195	156,108	188,675	201,130	195,379	185,455	189,662	177,213	185,154	208,442	188,220	1,875,438
Average population	241	428	517	551	534	508	519	485	505	571	515	513
Average daily cost of maintenance, in francs	2.46	1.06	0.97	0.8982	0.8804	0.9259	0.9589	1.1719	1.1097	0.9951	1.0169	0.9987
Number of convicts admitted to the infirmary	7	36	42	33	52	36	41	37	40	41	28	386
Number of days of sickness	94	1,297	2,043	2,005	1,883	1,306	1,327	1,427	1,664	2,067	1,159	16,178
Number of punishments inflicted	20	175	149	167	76	95	129	86	88	102	85	1,152
Number of days of punishment	109	1,370	1,116	1,300	685	930	1,276	925	924	1,355	1,038	10,928
Average number of sick per day	1	4	5	5.49	5.15	3.57	3.63	3.91	4.55	5.66	3.17	4.41
Deaths	1	11	8	11	7	3	6	4	6	5	5	66
Suicides	.....	.....	2	4	1	1	.....	3	3	.....	1	15
Cases of mental derangement	.....	.....	5	3	2	2	1	.....	.....	1	.....	14
Attempts at escape	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Escapes	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crimes or misdemeanors committed by the convicts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acts of rebellion or assault against the person	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Accidents, fires, and unusual occurrences	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1
Amount of gratuities earned by prisoners, in francs	1,028.77	16,341.71	20,281.13	20,867.60	21,390.48	19,090.24	21,197.74	18,116.02	20,859.59	23,937.53	21,647.99	203,730.03
Average per prisoner, in francs	4.27	38.18	39.23	37.87	40.06	37.58	40.84	37.35	41.31	41.92	42.03	39.64

* The prison was opened on October 1, 1860. The first column (1860) is given only from memory, and should not be included in the totals. The totals comprehend only the years 1861–'70.

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III.—THE NETHERLANDS.

[Translation.]

I. All the prisons in the Netherlands are under the superior direction and control of the minister of justice, and the general inspection of the prisons has hitherto been made by an inspector, who has his deputy in the bureau of the department of justice. For the inspection of the buildings, an engineer-architect is attached to the same department. Further, according to the provisions of our code of criminal procedure, (article 421,) the courts and tribunals are required to cause the prisons to be inspected, from time to time, by members assigned to that duty, and the same obligation rests upon the attorneys general, and upon the officers of justice, (*procureurs du roi.*) These latter are bound to make this inspection at least twice a year. The reports of all these inspections are addressed to the minister.

The administration of the several prisons is confided to administrative commissions, named in each locality where a prison exists. The members of these commissions are named by the king, from among the notables of the locality, who receive no salary. Whatever appertains to the local administration, to the internal service, to the discipline, and to the execution of the general and special regulations, is confided to these commissions, or is done through their agency. They are in official relation with the minister, either directly or by the deputy of the royal commissioner (governor) of the province, their immediate superior and their honorary president.

II. There are four classes of prisons: The central prisons, for persons sentenced to more than eighteen months of imprisonment; the detention prisons, in the chief cities of the several provinces, for persons sentenced to eighteen months or less; houses of arrest, in the chief towns of the several *arrondissements*, for persons sentenced to three months or less; and police or cantonal prisons, in the chief places of the cantons, for persons sentenced to one month and under.

In some cantons these prisons are united together. Among the prisons there are several on the cellular plan. In the three last-named classes of prisons are also prisoners under arrest, and awaiting their trial.

III. The law has left it to the discretion of the judge to award either associated imprisonment or, when the circumstances of the offense or the character of the convict appear to him to require it, or he himself judges it useful, imprisonment on the cellular plan. This power, at first, in 1851, restricted to the case of a sentence to one year's imprisonment or less, was extended in 1864 to sentences of two years, and afterward, in 1871, to sentences of four years. In no case, however, can the sentence to cellular imprisonment exceed the moiety of the duration of imprisonment in association, which may have been pronounced by the judge. The maximum of cellular imprisonment is therefore actually two years. To persons sentenced for a violation of police regulations cellular detention is not applicable.

IV. To obtain decisive results, results of which a judgment may be formed with some degree of certainty on the relative merit of the two systems, it would be necessary that the application of the systems be made in a uniform and not an arbitrary manner, which would permit a fair comparison of the results obtained. Now this application is still made (see the description given under No. III) in a manner very irregular and little harmonious. Consequently there yet exists a great difference of opinion on the question of preference, and above all, on the results obtained, and which might be obtained, by a judicious applica-

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tion of the two systems. Still it may be said that the cellular system (in itself, and apart from the manner of applying it, and the limits which should be imposed upon it) scarcely encounters any adversaries; and for imprisonments of short duration the opinion which desires a universal application of this system is gaining ground. As regards imprisonments of long duration, public opinion is still too unsettled and too undecided to even permit a judgment of the direction which it will finally take.

V. The funds necessary for the maintenance of the prisons and the prisoners are placed, annually, on the budget of the kingdom. The product of the prisoners' labor contributes to them only in a proportion very inconsiderable, because only a part of it is retained for the state. This part is 60 per cent. for those sentenced to reclusion and military prisoners, 50 per cent. for other inmates of the central prisons, and 30 per cent. for those confined in other prisons.

VI. As to the appointment of officers: The directors of the central prisons are named by the king; the other employés by the minister of justice. They hold their offices until they are displaced, dismissed, or retire from the service.

VII. We hold it to be necessary that the directors and employés of the prisons be men of tried morality, intelligent, and gifted with tact and with the knowledge necessary to inspire the respect of the prisoners, even without the use of a severe discipline. This respect depends principally upon the spirit of justice, equity, and humanity which they exhibit in their relations with the prisoners. In the directors, especially, there is needed a high degree of mental culture and an enlightened understanding of their duties, we might say, indeed, of their mission. A knowledge of the more important foreign languages is necessary, that they may be able to read and study the best writings on prison discipline, and to communicate with the foreign prisoners. Unhappily, we cannot affirm that the majority of the directors and employés of our prisons possess these talents and qualities, a fact which is due chiefly to the circumstance that the salaries are too low, and that the service of the prison officers is, in general, too onerous, and held in too little esteem. As a consequence, young men of good family and education refuse to enter upon this career.

VIII. There are no schools specially designed for the education of prison officers, and we do not regret it. The best school is a well-organized and well-governed prison, where are offered to the young employés the means of acquiring knowledge and developing their talents, by the reading and the study of the best writings on the subject of prisons.

IX. The pensions accorded to the directors and employés, who have become incapacitated for the performance of their official duties, depend on their state of service and on the number of their years of service, according to the general rules established by law in regard to the pensions of all civil officers.

X. This question calls for a statement of the difference between sentences to simple imprisonment, to reclusion, and to hard labor.

Our penal laws recognize only reclusion and imprisonment, (without reckoning imprisonment for a breach of public regulations,) besides the punishment, for military offenses, of the wheel-barrow and simple detention. Apart from the difference in the retention on the product of labor, (*Vide* No. V,) the treatment offers little variation, and the labor is the same. We endeavor to find for all some kind of useful and remunerative labor, and to teach a trade to all, at least, who are sentenced to an imprisonment of considerable duration.

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XI. As regards separating the prisoners into categories: In the central prisons, there is a classification which permits the separation of the more hardened and the more dangerous, as well as of the recidivists, from the other prisoners. The results of this separation may be regarded as favorable.

XII. Agreeably to a royal decree of 1856, the administrative commissions of the central prisons submit every year a proposition for pardons or remissions, to be granted to prisoners who have distinguished themselves by their good conduct. These propositions, however, include only persons who have been sentenced to more than three years, and who have undergone at least one-half of their punishment, and the remission does not exceed six months. Besides this, all prisoners have the ordinary recourse of applying to the king for pardon or remission; and since, in general, a decision is made only after a report from the commission on the conduct of the prisoners, this conduct has, generally, a strong influence upon the decision.

XIII. The part of the product of labor not retained by the State (see No. V) is given to the prisoner. Such part is not increased by reason of his good conduct.

XIV. No other rewards are given to prisoners besides this participation in their earnings. The distribution of premiums has been abolished for some time, and the industry of the prisoners finds its recompense in the increase of its profits, which naturally results from its zeal and its capacity. Still, the re-establishment of premiums is under consideration.

XV. The kinds and frequency of the violations of prison rules differs sensibly in different prisons, and often depend on the more or less intelligent administration of the chiefs and the employés.

Insubordination and quarrels may be regarded as the most frequent infractions. Isolation by night, (which is not yet generally introduced,) has, in this respect, produced good fruits.

XVI and XVII. The disciplinary punishments in use are: restriction to bread and water, withdrawal of the privilege of writing and receiving letters, privation of books, the dungeon, fetters; and, in the central prisons, isolation in a cell.

All these punishments are recorded in a register, which is consulted in the cases mentioned in No. XII.

XVIII and XIX. There are no special chaplains attached exclusively to any prison; but in all the central prisons, in all the houses of detention, and in the greater part of the houses of arrest, the office of chaplain and the religious services are confided to one of the ministers of each religion, who is named by the minister of justice.

The duties of the chaplain consist in performing religious service on Sundays and feast-days, in making pastoral visits, and in imparting religious instruction.

XX. Religious instruction, given with intelligence, is considered by us of great importance as an agency in the reformation of prisoners. In some prisons there has also been introduced the system of proverbs. This consists in hanging on the walls of the halls and cells pithy moral sentences, and in changing them from time to time. In the opinion of experienced persons, this plan deserves to be recommended for general use.

XXI. Persons of both sexes, outside of the administration, are admitted into the prisons to labor among the prisoners, with a view to their moral regeneration. In some cities there are private associations

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to visit the prisoners, organized by the general society for the moral amelioration of prisoners.

XXII. Sunday-schools have not been established in the prisons of Netherlands.

XXIII and XXIV. The administration of each prison regulates the correspondence of the prisoners as it judges most expedient. There is no general rule upon the subject.

All the letters received for or written by the prisoners are subjected to the inspection of the directors, and are withheld when their contents are improper. There is, therefore, no ground to apprehend injurious effects, and, in general, the correspondence of the prisoners is attended with a beneficial influence.

XXV, XXVI, and XXVII. The prisoners are permitted to receive the visits of their friends as often, generally, as once a month.

A grating separates the prisoner from his visitor, and an employé is always present to supervise the interview, which, as a general thing, may not exceed a quarter of an hour. They cannot converse privately.

As in the case of the correspondence, it may be said that the general effect of these visits is good.

XXVIII. The percentage of prisoners able to read and write on their commitment varies from 62 to 65. The number of prisoners able to read, but unable to write, is not indicated in the official statistics.

XXIX, XXX, and XXXI. Schools exist in all penal establishments, except in the police and cantonal prisons. In the cellular prisons the instruction is given in the cells. All prisoners up to the age of forty years, who do not know how to read and write, are obliged to receive that instruction.

The branches generally taught in these schools are: reading, writing, and arithmetic. Yet the system of instruction leaves, still, much to be desired. In some of the central prisons important reforms have been already introduced; in others, they will speedily follow. In the two central prisons for juvenile prisoners, the system of instruction leaves nothing to be added.

XXXII and XXXIII. There are libraries in all the prisons, which include books on morals and religion, also histories, travels, &c. The books are specially classified according to the different religions. These libraries are designed exclusively for the prisoners, and not yet for the employés.

Most of the prisoners are very fond of reading, and they generally prefer books of history and, above all, of travels. Their reading has a happy effect upon them.

XXXIV. In some prisons the system of sewage is still imperfect, but effort is made to introduce reforms.

XXXV. The quantity of water, designed for the use of the prisoners, is nowhere limited. Generally the quality is good, but in some localities it is difficult and expensive to procure it.

XXXVI. The prisons are, mostly, well ventilated, particularly the central prisons. Where improvements are still needed, means are employed to accomplish them.

XXXVII. Regarding the means employed to insure the cleanliness of the prisons: The interior domestic service is performed by the prisoners. Earnest endeavors are everywhere made to insure cleanliness, which is, for the most part, satisfactory, and is energetically supervised.

XXXVIII. The personal cleanliness of the prisoners is assured by a

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vigilant attention to their dress and their persons, and by requiring them to bathe at stated periods.

XXXIX. The arrangement with regard to water-closets differs in different prisons. In a number of them, the system of inodorous portable vessels has been introduced, with a reservoir outside of the building. Preference is generally given to this system.

XL. The prisons are commonly lighted by gas or petroleum. Lights are kept burning in the dormitories during the night.

XLI. The system of heating varies in different prisons. In some the heating is effected by hot water or steam, in others by stoves.

XLII and XLIII. The prisoner's bed is made of straw; for the sick, of sea-grass or sea-weed. Hammocks were formerly in very general use, but by degrees they have been replaced by open bedsteads.

The bed, complete, consists of a mattress and bolster, two sheets, and one coverlet of a coarse material, and one or two blankets, according to temperature of the season.

XLIV. There is no general rule regarding the distribution of time. The hours of labor (including those of school) are ten in summer and nine in winter; and of sleep, eight and a half in summer and nine in winter. The remainder of the time is at the disposal of the prisoner, for meals, rest, study, and reading; that is to say, five and a half hours in summer and six in winter.

XLV. A distinct part of the prison building serves as an infirmary. In the cellular prisons, cells of double dimensions are appropriated to the sick. The medical service is confided to a military surgeon wherever there is a garrison; to a civil physician in localities where there is no garrison. The entire service is under the inspector general of the medical service of the army, and is performed in a highly satisfactory manner.

XLVI. The most common diseases in the prisons, as outside, are diseases of the chest, especially phthisis.

XLVII. The average of the sick and of deaths it is not easy to give. It differs a good deal in different prisons, depending on local circumstances and the class or species of prison. The difference in the duration of punishments, which is by no means inconsiderable, exercises a great influence on the proportionate number of the sick and of deaths. A comparison of the number of days of sickness and the number of deaths with the days of detention gives, during the period of 1861 to 1868, an aggregate annual average for 100 days of detention:

In the central prisons, 8.14 days of sickness, (varying from 6.35 to 12.57.)

In the houses of detention, 6.07 days of sickness, (varying from 4.47 to 7.74.)

In the houses of arrest, 6.39 days of sickness, (varying from 4.39 to 8.24.)

During the same period the deaths were at a rate of an annual average:

In the central prisons, one death to 8,225 days of detention, (varying from 4,973 to 21,177.)

In the houses of detention, one death to 17,896 days of detention, (varying from 10,737 to 35,204.)

In the houses of arrest, one death to 10,080 days of detention, (varying from 11,899 to 380,052.)

In the central prisons for juvenile prisoners, where the labor is performed in the open air, the sanitary state is highly satisfactory.

XLIX. The distinction between penal and industrial labor does not

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exist in this country. Penal labor is unknown. All the labor in the prisons of our country is industrial, with the exception of prisoners employed in the domestic or administrative service of the prisons. Agricultural labors are as yet pursued only in the two central prisons for juvenile delinquents.

L, LI, and LII. Penal labor, as has just been stated, does not exist in the Netherlands.

LIII. Industrial labor is everywhere directed by the administration. It is performed in part on account of the government; in part on account of contractors or individuals; and in some prisons, the contractors are allowed to participate in the control of the supervision of the labor.

LIV. It is our belief that the system followed in our prisons deserves the preference. Generally, we give the preference to labor performed on account of contractors or individuals, who offer a greater variety of handicrafts. But the labor done for account and service of the state has not the inconvenience of being sometimes interrupted for want of demand. We therefore judge that it is better to retain both systems.

LV. Different systems of contracting the labor do not exist here. The contractors furnish the raw material and pay the wages. Frequently they furnish, also, the necessary tools.

LVI. The percentage of prisoners not having a calling at the time of their commitment differs materially in the different prisons. One in four is, perhaps, the general average.

LVII, LVIII. It is sought, as far as possible, to teach prisoners a trade; but in short imprisonments the thing is impossible.

We regard it as of the highest importance to impart to prisoners during their incarceration the power of self-help, and this result is diligently sought by teaching to the prisoners, to the utmost extent possible, some useful calling.

LIX. We do not think that repeated sentences to short imprisonments produce any good effect upon the prisoner; but an equitable application of the penal law forbids the remedying of this evil by a long imprisonment for minor offenses. Yet considerable progress would be made in the right direction by applying the cellular system to all imprisonments of a short duration.

LX. In the absence of criminal registers, (*casiers judiciaires*,) a system devised by Bonneville de Marsangy, the statistics of recidivists are defective. The proportion given by our imperfect statistics for the general mass of prisons is 25 per cent.; and in the central prisons, 36 per cent.

LXI. According to our penal laws, a relapse may give occasion to an increase of the punishment in the ratio of one-third, when the first sentence was for more than a year's imprisonment; and in all cases it is a circumstance which may determine the judge to award the maximum of punishment allowed by the law.

LXII. Persons imprisoned for debt are placed in the houses of detention and of arrest, sometimes in the cantonal prisons. They are entered on a special register, and are not confounded with other prisoners. In the greater part of the prisons the best apartments are assigned to them, and a little better furniture. They do not wear the prison dress, unless, indeed, they have no other; and their food is of a better quality.

LXIII. The causes of crime vary a good deal according to the nature of the crime itself. The want of education, drunkenness, and the desire to make a figure beyond one's means and position, may generally be considered as the principal causes of crimes and misdemeanors. In the case of young prisoners, there may be mentioned, in addition, the in-

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fluence, often pernicious, of a second marriage of their parents, which not unfrequently, by embittering the position of the children of the first marriage, deprives them of the salutary influence of family life.

LXIV. The general proportion in which the sexes are represented in the Netherland's prisons is about twenty women to one hundred men; but this proportion varies, especially in different provinces.

LXV. The aim is to make the punishment, as far as possible, contribute to the reformation of the prisoners. But the application of this principle, in most of the prisons, leaves much to be desired.

LXVI. Although it is very difficult to pronounce, with any degree of certainty, as regards the influence of imprisonment on the great mass of prisoners, it cannot be said, in general, that they leave the prison worse than when they entered it, and numerous cases can be pointed out, in which the instruction received in the prisons, the habit of labor formed, and the knowledge of a calling acquired there, have exerted a very happy influence upon the liberated prisoner.

LXVII. In answer to the question whether efforts are made to aid liberated prisoners in finding work, and thus to prevent a relapse, we answer that, officially, such efforts are not made. But many directors of prisons take great pains to find work for the liberated, and generally they have cause to congratulate themselves on the result of their efforts. The greater part of the directors, however, are too indifferent to concern themselves about the matter.

Zeal in this direction is an indication of a good director.

LXVIII. The Netherlands society for the moral amelioration of prisoners has for its object not only to visit the prisoners, but also to interest themselves in their welfare after their discharge from prison. This society counts forty branches, scattered throughout the whole kingdom, and corresponding members in thirty-seven places where there are no branches. To some of the branch societies are attached committees of ladies. As regards the prisoners, a variety of methods are employed to encourage and help them. They procure places for them at service; they place them in the merchant marine; they supply them with tools; they obtain for them some little industry or business; they provide them with the means of emigrating, &c., &c. The results differ, as a matter of course; but it may be said, without exaggeration, that the society accomplishes much, and often sees its efforts crowned with success. Still, it can extend its activity only to a part of the liberated prisoners, and it is to be desired that its benevolent operations should be conducted upon a larger scale. Some time ago certain philanthropists sought to secure the organization of a special patronage society for juvenile delinquents, but without success.

LXIX. To the question, "Are you satisfied with your prison system as at present organized and administered?" we cannot return an affirmative answer. The greatest defect in our prison system is, in our opinion, that there is no system, or, rather, that the two systems of associated and cellular imprisonment are applied without any uniform rule, and without placing them in a harmonious relation to each other. Hence there is a pretty general agreement among us that a reform is necessary, and that it should have mainly two objects in view: a revision of our penal laws, which would introduce a more uniform and more harmonious system of imprisonment; and a serious effort to give greater dignity to the position of the directors and employés, and to open these offices to men of a higher education. Whatever differences of opinion may exist as regards the system to be followed, (and they are great, since all the systems which divide *savans* find their partisans among us,) on these two points there is a very general agreement.

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IV.—SWITZERLAND.

[Translation.]

I and II. The Swiss Confederation, composed of twenty-two cantons and embracing twenty-five states, does not, by its own power, exercise any control over the administration of penal justice and of prisons, or over the penitentiary *régime*. Military and political penal justice, so far as it is called upon to punish offenses against the constitution and the federal laws, alone comes within its jurisdiction. Each canton is sovereign. It has its own special penal system and places of imprisonment. Its prisons are thus placed under the control of the cantonal executive authority, or of the council of state.

The supervision of the prisons belongs more especially to one of the departments of the executive power. In certain cantons the prisons are placed, wholly or partially, under the supervision of the department of police; in others under that of the department of justice or of the interior, according to the stand-point from which the importance of this public service is viewed. In the cantons in which recently constructed penitentiaries are found, the whole or a part of the supervision is confided to the director of justice, or to a special department, which gives its attention not only to prisons, but also to hospitals, insane asylums, &c., &c. This department associates with itself a commission of supervision composed of three to seven members, selected from among persons experienced in questions of penitentiary reform, of industry, and of commerce.

In the cantons where this machinery exists, an official regulation defines the functions of the commission of supervision.

The detention prisons in the districts and the places of detention for civil penalties are supervised by the agents of the council of state—prefects, counselors of prefecture, &c.

All the cantons of Switzerland, with the exception of Jug, Glaris, and Appenzell, have reclusion prisons, of which the number of inmates rises to thirty-four, without counting a considerable number of houses of arrest, and of district or correctional prisons for persons sentenced to short police punishments.

Of these twenty-four prisons, eleven are reserved exclusively for criminals, thirteen contain criminal and correctional prisoners, and some receive, in addition, prisoners awaiting trial.

Four establishments receive as boarders the convicts of cantons which, without penitentiaries of their own, have only imperfect and insufficient places of reclusion. Ten work-houses and houses of correction are exclusively devoted to the treatment of correctionals.

There are, besides, in Switzerland several agricultural establishments founded by the state, by communal corporations, or by societies of public utility, and designed for the education and moral reform of juvenile delinquents, or to that of vagrants and disorderly persons.

According to Professor d'Orelli, the prisons of Switzerland may be divided into four groups:

1. Those of the cantons of Uri, Schwytz, Obovalden, Nidwalden, and Valais, which are administered in an altogether patriarchal manner by Sisters of Charity.

2. Those of the cantons of Fribourg, Bâle-campagne, and Lucerne, which, in every point of view, leave much to be desired. Bâle-campagne, under the pressure of necessity, contemplates replacing its too contracted prison by a new structure.

3. The cantons of Saint Gall and of Vaud possess, especially the first,

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good penitentiaries on the Auburn system. The Thurgovian establishment of Tobel, and that of Geneva, may be also considered as satisfactory. The same is true of Zurich, in which are found, at the same time, the systems of cellular and associated reclusion. Here, above all, on account of constructions in progress of erection, things will be better still. Solure, Grisons, Berne, and Schaffhause are making laudable efforts to reform their prisons, which will soon belong to this fourth class.

4. Finally, and as rising to a higher point of perfection, we cite the penitentiaries of Lenzbourg, (Argovie,) Bâle-ville, Neuchâtel, and Tessin, into which has been introduced, in different degrees, the progressive Irish penitentiary system.

III. The cellular system complete is applied only in the penitentiaries of Argovie, (Lenzbourg,) Zurich, Bâle-ville, and Neuchâtel. In the Auburnian penitentiaries, and the old convict or hard-labor prisons, (*maisons de force*,) cellular seclusion is an exception.

M. d'Orelli, in his work on the Swiss prisons, indicates the following numbers, which we group according to the systems introduced into the different establishments:

First group, patriarchal system, cellular reclusion, 1.02 per cent.
Second group, old convict prisons, cellular reclusion, 3.9 per cent.
Third group, system of Auburn, cellular reclusion, .3 per cent.
Fourth group, progressive system, cellular reclusion, 37.5 per cent.

The penitentiary of Neuchâtel alone shows a greater number of days of cellular reclusion than of labor in association. In this establishment, erected in 1870, separation by day and night is admitted in principle, without, however, excluding labor in common workshops.

As will have been seen, the system of congregate imprisonment predominates. Still effort is made to introduce individual separation, at least by night, in establishments in which common dormitories yet exist.

IV. There is a general agreement that the system of congregate imprisonment by day is favorable to industrial labor, and not unfavorable to the discipline, but incompatible with the moral education of the prisoners. Association in common dormitories by night is considered especially pernicious, and all that has been said by Obermaier and others on the harmlessness, and even the salutary influence, of this practice, is looked upon as illusory.

Imprisonment in common by day and night, condemned in Switzerland, would already have entirely disappeared if, in a number of cantons, financial questions had not caused the postponement of this reform.

Rigid cellular imprisonment is preferable to the Auburn system, without classification of the prisoners.

Mr. Kühne, director of the penitentiary of Saint Gall, (Auburn plan,) admits individualization as a principle, and the mixed system, if system it can be called, compounded of different elements of the progressive Irish prison system.

Penitentiary education imperatively requires cellular separation, at least in the initial stage; and it is on this sole condition that the prisoners can effectively enter into communion with themselves, a process which would be impeded by the contact and influence of some, at least, of the fellow-prisoners.

After the cellular stage, it is considered expedient to allow those prisoners to work together who furnish ground of hope that a moral reformation has been accomplished in them. It is under these conditions that we find associated labor in the recently constructed penitentiaries

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of Lenzbourg, (Argovie,) Bâle, Zurich, and Neuchâtel. But in comparison with the three first named, which have large workshops, Neuchâtel has but small ones, in which only three or four prisoners can work, under the supervision of a foreman.

The public opinion of our country shows itself more and more favorable to the progressive Irish penitentiary system, with revocable liberation.

The exclusive cellular system should be reserved for houses of preliminary detention. In some of the cantons reforms are needed in this class of prisons.

V. In regard to the method of providing the funds necessary for the support of the prisons, the treasury of the state (cantonal) covers the deficit which exists between the entire expenditure and the special receipts of the prisons. (Industrial labor, moneys paid by cantons which place their convicts in the penitentiaries of other confederated states, &c.)

The average annual cost of each prisoner is 250 francs in the smaller establishments, and 350 to 400 in the large penitentiaries. The average net gain in the majority of the cantons is from 89 to 90 centimes for each day of labor.

In the penitentiary of Zurich the net gain of the prisoners, after deducting the cost of tools and other accessories, has reached an average for the last five years of 1 franc 7 centimes.

	Francs.
The expenditures for clothing, food, lodgings, &c., were	0.773
Expense of the administration	0.41
Sum total per prisoner for each day	1.18

The canton of Argovie gives, as a subsidy, 55 centimes per man and per day. The average daily earnings of the prisoners in the Lenzbourg penitentiary amount to from 88 to 94 centimes to each prisoner.

The canton Neuchâtel gave for the first year (1870) an annual subsidy of 1 franc 90 centimes per day for each prisoner. The cellular system, and the small number prisoners, (70 on the average,) involve considerable of a general character. The net gain per prisoner in this penitentiary rose, in 1871, to 1 franc 25 centimes for each day of labor, a larger gain than had ever been reached in any of the Swiss prisons.

In the penitentiary of Saint Jacques (Saint Gall) the earnings of the prisoners suffice for their maintenance, for their schooling and religious instruction, for medical attendance, and for the administration of the industrial service. The State, in this canton, includes in its subsidy, besides the loss of the interest on the capital invested in the establishment, the expense of repairs to the buildings, the salaries of the officers and employés, the maintenance of these latter, and, in short, the sum which is annually granted to the prisoners as *peculium*.

VI. The officers and employés of the prisons are named by the council of state. In the cantons where penitentiaries of recent construction exist, the officers (directors, stewards, instructors, chaplains, and physicians) are proposed by the department of justice or of police, which takes the advice of the commission of supervision. The employés (the foremen and overseers) are appointed by the commission of supervision, on the nomination of the director of the penitentiary.

In some cantons the officers are subjected to a re-election every three years, (Zurich,) or every four years, (Argovie,) the employés every year,

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(Zurich,) and in other penitentiaries the tenure of office is without limitation.

It may be affirmed that, as a general thing, the officers of the Swiss penitentiaries are not exposed to the influence of political changes, and that those whose position may have been endangered by the victory of a party have been effectually shielded by a public opinion which appreciated their merits and their devotion.

In some cantons the position of the directors is made difficult by the demands of doctrinaires, who do not give themselves the trouble to examine and weigh the facts which enter into the question.

VII. In cantons where efforts have been made to introduce a rational prison system, it has yet been well understood that, under a bad administration, the prisons, instead of being hospitals for moral diseases, would become seminaries of criminals. For this reason, the greatest importance is attached to the choice of officers charged with the treatment of the prisoners.

As regards the moral and intellectual qualities which ought to meet in prison officers, there are found on this subject, in the literature of penology, details sufficiently numerous.

Whether in Switzerland the administrators possess the necessary talents and qualifications is a question which the writer of the present report cannot and does not wish to touch upon. The governments would be better able to answer the question, although the greater part of them do not take the trouble to examine thoroughly the organization and management of the penitentiary establishments. The director of a penitentiary does feel inclined to pass judgment upon the merits of his colleagues, and of the other officers, and still less upon their special aptitudes. At the same time, we judge that this question is one of great importance, and that it ought to have a prominent place in the deliberations of the congress. The speakers, in such an assemblage, occupy a position altogether different.

The penitentiaries of recent construction are presided over—

At St. Gall, by a distinguished man who, after having completed his university course, devoted himself to the profession of a teacher. After the decease of Mr. Moser, the first director of Saint Jacques, Mr. Kühne, known as a teacher of great intelligence, was unanimously chosen to fill his place.

At Zurich, by a former pastor who, before passing through his theological course, had been an artisan. For a number of years he discharged the duties of teacher in a secondary school. He has been a member of the legislative council of his canton, and of commissions of education.

The directors of the penitentiaries of Lenzbourg and Bâle belonged also to the ecclesiastical profession, and recommended themselves by their zeal in the study of social questions. Mr. Mühler, director of the penitentiary of Lenzbourg, has long been president of the commission of education in the city of that name.

The penitentiary of Neuchâtel is directed by a man who was previously engaged in the practice of medicine, and in that profession, from choice, much devoted to the science of public and private hygiene. He has retained the position of president of the commission of education in the city of Neuchâtel.

The penitentiary of Tessin will be directed by a man who has studied the profession of law.

The other officers and employés, foremen, and overseers, should on

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their part contribute, by their knowledge, their tact, and their example, to the success of the common labors.

Each penitentiary establishment (Zurich, Bâle, Lenzbourg, and Neuchâtel) has a band of intelligent employés, who contribute effectively to the mission which penitentiary education proposes to itself.

On all sides, notwithstanding, complaint is made of the difficulty which is experienced in finding for the corps of subordinate employés men possessing the requisite qualities and aptitudes.

VIII. Schools designed for the special education of prison officers do not exist in Switzerland.

It is generally felt that special schools would render an excellent service, especially if a just and sound idea should be given in them of the nature and aim of penitentiary treatment. Without wishing to exalt one system over another, that is, to dogmatize, a school of this kind would have the immense advantage of preparing the officers who, at present, acquire their experience at the expense of the institution. But this school would not be in a condition to form good officers and good employés with persons in charge who should not have the requisite qualifications, even though possessing the desired degree of intelligence. The education of our penitentiary employés is usually acquired after their entrance upon their official duties, which, for a long time afterward, will not be regarded as a profession.

Directors, when appointed, usually visit the model penitentiaries of other countries and study their organization. The employés receive, in their turn, from the directors, theoretical and practical instructions touching their official duties.

Perhaps an education for the penitentiary service might be obtained by establishing in some university a chair of penitentiary reform, and by making a course of instruction in that branch of knowledge obligatory for all those who intended to devote themselves to the moral reformation of criminals.

A normal school for the employés might be organized in establishments selected for that purpose, in which candidates might pursue a theoretical course, and might also be practically initiated into all the branches of the service.

In a well-organized and ably managed penitentiary we see novices who possess the necessary aptitudes becoming in a short time entirely competent to the discharge of their functions.

In Switzerland, pensions are granted only in exceptional cases to public functionaries. The directors and employés of our prisons, when they become incapacitated for their duties, form no exception.

There is sometimes granted to a functionary dismissed, because of age or sickness, three months' salary, and in case of death his family receives, in some cantons, the same gratuity.

The salary of the director of a modern penitentiary ranges from 3,000 to 3,500 francs, besides a residence; that of stewards, from 2,000 to 2,500 francs, with or without residence; of the chaplains, from 400 to 600 francs; of the teacher, from 1,000 to 1,800 francs; of the physicians, from 400 to 600 francs; of the chief keeper, from 900 to 1,200 francs; of the foreman, from 700 to 1,000 francs; and of the overseers, from 400 to 750 francs per annum.

X. The difference existing between sentences to simple imprisonment, to reclusion, and to hard labor, is greater or less in the different Swiss cantons. These, as has already been said, have all penal codes of their own, which differ materially from one another. For this reason it is not

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easy to give, in few words, an exact idea of the difference between the classes of imprisonment named above.

Simple imprisonment, whether police or correctional, in some cantons varies from a duration of twenty-four hours at least to five years at most. This punishment, when it is of short duration, is in some cantons undergone in the district prisons. The prisoner is permitted, at his own charge, to provide nourishment and occupation for himself, after having paid the damages caused by him, and the expense of his prosecution, without which he receives the ordinary treatment and is subjected to the customary labors of the prison.

In other cantons, prisoners of this class undergo their punishments in the same prisons as criminals, from whom they are more or less separated; still all are under the same regulations. In other cantons still, there exist special penitentiaries for persons sentenced correctionally. This punishment is not considered infamous; it may even, in some cantons, be replaced by a fine fixed at 5 francs per day.

Reclusion occupies a middle place between simple imprisonment and a sentence to hard labor; and the reclusionary undergoes his punishment in the work-house, where there is one, or in the penitentiary. A fine cannot be substituted for reclusion.

At Zurich reclusion has a duration of from six to ten years, and the convict is compelled to labor, and is subjected to the ordinary regulations of the prison. But he does not wear the prison dress, and does not lose his civic rights.

In some cantons, in Argovie, for example, the law leaves it to the judge to fix, in many cases, the duration of the privation of civic rights. Elsewhere, the dress alone differs; and the distinction between simple reclusion and hard labor is found in this, that the latter punishment is considered afflictive and infamous, whereas the former is simply afflictive.

Reclusion, with hard labor, varies in its duration from one year to fifteen, twenty, twenty-five, or thirty years, according to the cantons, or even to an imprisonment for life.

The death penalty is abolished in the cantons of Neuchâtel, Zurich, Thurgovia, Geneva, and Tessin. In the majority of the other cantons this punishment is abolished *de facto* if it is not by law.

In some cantons reclusion, with hard labor, is aggravated by wearing chains, by an infamous dress, and by physical privations. But these additional punishments are gradually disappearing.

XI. A methodical classification of prisoners, according to their degree of morality, exists only in the establishments of Zurich, Bâle, Lenzbourg, and Neuchâtel, and will also be introduced into that of Tessin.

In the other penitentiaries endeavors are also made to classify the prisoners according to their degree of morality; but frequently the architectural arrangement of the establishments does not afford opportunity to apply this classification methodically and with chance of success.

At Lenzbourg, where the progressive system has been for a number of years in use, there is found a first class, which is subjected to the cellular *régime*, and a second and third class, into which the prisoners, on leaving the first stage, are admitted to associated labor in the workshops during the day. The prisoners who belong to the higher class obtain an enlargement of privilege, are earliest proposed for admission to the benefit of conditional liberation.

Into the penitentiary of Neuchâtel has been introduced the following system of classification: A lower cellular class, in which are placed all the convicts on their entrance into the establishment; a middle class, comprising the prisoners who have been conspicuous for their good con-

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duct and industry, and their zealous application to learning in the first stage. The greater part remain in separation, but if their character, their state of health, their kind of occupation, and the material conditions permit it, and if they themselves are not opposed to it, (a decree of the great council leaves them liberty of choice on this subject,) they are admitted into one of the small shops of the establishment. Finally, there is a higher class, (cellular, but with labor in common during the day,) which precedes liberation.

Each of these classes corresponds to a relative degree of liberty, of which the prisoner may make use to satisfy, in a larger measure, his moral, intellectual, and physical wants. The principle of conditional liberation, which will sooner or later be admitted into the system, will afford the means of conducting the prisoner gradually toward freedom, and of re-introducing him into society without a too abrupt transition.

At Zurich, where conditional liberation already exists, the same system of classification is applied, but, as at Neuchâtel, only for a time too limited to enable us to announce serious results.

In the penitentiary of Zurich the number of prisoners admitted to associated labor is proportionally larger than at Neuchâtel, where the cellular system is more highly esteemed.

At Saint Gall the prisoners are divided into four classes. The classification is revised and readjusted every three months.

As appears from the above statement, the progressive Irish system, where it is applied, is confined in its execution to one and the same establishment. We have no intermediate prisons. The financial resources of a single canton would not permit the realization of such a system, at least, unless several cantons should agree to unite in the common execution of a rational plan of penitentiary reform. On the other hand, public opinion, still more or less imbued with the old theory of vengeance and intimidation, would not be favorable to such a change.

XII. In all the cantons prisoners may, by their good conduct, obtain an abbreviation of their punishment by applying for pardon to the legislative authority, (great council,) which reserves to itself this right. Such reduction is rarely made conformably to fixed rules. In many of the cantons complaint is made that chance and caprice play too conspicuous a part, and that commissions of pardon do not always take account of grave and important facts. In some cantons clemency is exercised readily enough, while in others this is done only in exceptional cases.

In certain cantons a decree of the legislative authority confides to the council of state, or to the department of justice, or police, the right of remitting the latter portion of their punishment, (one-twelfth for example,) to convicts whose conduct has been good. There is here, as in the whole penal system, a great want of congruity, yet there is observed in the confederated states, where penitentiary reform has made some progress, a tendency to bring down the use of the right of pardon to its minimum, and to substitute in its place the principle of conditional liberation; in short, to confide this function to the direction of the department of prisons, which, having the supervision of the penitentiary administration, is alone capable of judging whether or not the reentrance of a prisoner into society offers any danger, and whether a probationary liberation may be safely granted him.

XIII. In most of the cantons the prisoners have a share in the benefits of their labor. As a general thing this part has rather the character of a gratuity than that of lawful wages.

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In the penitentiary of Argovie the prisoners receive their share in the following proportions:

Prisoners whose earnings do not reach 30 centimes a day receive nothing; those whose earnings amount to 70 centimes a day receive 5 per cent.; 1 franc 10 centimes, 10 per cent.; 1 franc 60 centimes, 15 per cent.; exceeding 1 franc 60 centimes, 20 per cent.; and that whether their conduct is more or less satisfactory.

Neuchâtel has adopted, provisionally, the same scale. At Zurich the participation in the benefits of the labor is fixed, according to the three penitentiary classes, as follows:

In the first class (cellular) it is from 5 to 8 per cent., conditioned upon the fact that the earnings of the prisoner are not less than 6 per cent. of the daily average earnings, obtained in the branch of industry in which he works. In the second class the portion of the prisoner is from 8 to 12 per cent. In the third class, which precedes liberation, it is from 12 to 16 per cent. on the same condition.

Elsewhere a percentage of the daily earnings has been introduced.

At Saint Gall the prisoners of the lower class receive no gratuity; those of the second class receive a sixth of their earnings; those of the third class, the fifth part; and those of the higher class, the fourth part.

The director of this penitentiary, Mr. Kühne, proposes, in a paper on the *peculium* of prisoners, to fix the rate according to the classes. For example: The day's wages being fixed at a franc, the prisoners of the lower class would receive 10 per cent., or 10 centimes; those of the second class, 20 per cent., or 20 centimes; and those of the superior class, 30 per cent., or 30 centimes.

The question of *peculium* is still in Switzerland a subject of discussions, and has not been resolved. It is the order of the day for the approaching meeting of the Swiss society for penitentiary reform.

Whatever may be the scale adopted in the different establishments, this gratuity is granted to all the prisoners who, conformably to the regulations, have rendered themselves worthy of it. It is adjusted every month, or at the end of every three months, and placed to their credit in their memorandum of savings.

XIV. The other rewards employed to stimulate the good conduct and zeal of the prisoners vary in kind and amount, according to the cantons and the degree, more or less advanced, of penitentiary reform.

In well-administered establishments we see granted to good conduct, to application, to zeal, and progress in labor and school, the following rewards:

In the second penitentiary class: liberty to choose books from the library and to attend the lessons given in class; the use of tobacco, limited, however, to the hours of promenade in the exercise yard; liberty to have served to them a supplementary or extraordinary ration of food, which is granted only exceptionally in the more recently erected penitentiaries, the dietary in these being sufficiently nutritive and varied.

In the third or higher class there are added to the above-mentioned rewards the privilege of promenade and free conversation with their fellow-prisoners of the same class, liberty to wear their beard, to work in their free hours for themselves and their family, to adorn their cells and to have plants in them; the use of a patch of land for a garden; and admission to places of trust, such as foreman, to superintend their fellow-prisoners in learning trades, or to execute certain exceptional labors in the administrative, industrial, and domestic services.

XV. In the cantons where the patriarchal system prevails, and

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where the old convict prisons still exist, the most frequent offenses against discipline are disobedience and insubordination; next come escapes or attempts to escape; then lies; and finally immorality in acts and words. In the penitentiaries in which the Auburn system has been introduced we find that the infractions most frequent are disorder, want of cleanliness, and violation of the law of silence. In the penitentiaries of recent construction the want of propriety and dignity, lying, idleness, and disobedience.

XVI. The disciplinary punishments in use may be divided into three classes. In the prisons whose organization is imperfect, and where the reformation of the prisoners is not the aim of the imprisonment, we find existing the dungeon and corporal punishments. In penitentiaries on the Auburn system, more or less completely organized, corporal punishments are gradually disappearing and are being replaced by a diet of bread and water and by confinement in the dark or ordinary cell. In the modern establishments, we see coming into vogue a new series of punishments, of a moral order, among which figure, by the side of the dungeon and the diet of bread and water, admonition, privation of work, of reading, of visits, of correspondence, and, in general, of all or a part of the diversions, alleviations, and other indulgences above mentioned. Corporal chastisements are passing away, and in their place are substituted the strait-jacket and the cold douche-bath.

Those who, through mischief or negligence, destroy or injure the effects, objects, instruments, and raw material placed at their disposal, are obliged to pay the value of the damage done.

XVII. In most of the prisons are found registers in which the punishments inflicted are fully recorded. These registers, in the modern penitentiaries especially, give complete information as to the occasion, the kind, and the nature of the punishments inflicted.

XVIII. Ministers of the Reformed and of the Catholic religion act as chaplains in all the prisons. In well-organized penitentiaries, where the number of prisoners belonging to each creed is sufficiently large, two ecclesiastics are charged with the duties of their respective chaplaincies. The rabbi of the nearest locality is invited to visit such coreligionists as are occasionally found in the prisons.

XIX. In the establishments which are imperfectly organized, the chaplains, for the most part, confine themselves to the celebration of public worship. In proportion as they approach the category of penitentiaries that aim at the reformation of the prisoners, we see these officers paying regular visits to them, consoling and counseling them, superintending the religious instruction of the juvenile delinquents, and fulfilling toward them all the duties of their ministry. In some of the penitentiaries it is the chaplain who has charge of the distribution of books from the prison library.

XX. Religious instruction, as a means of reforming prisoners, is looked upon in Switzerland as of the highest importance and as exercising the happiest influence, particularly if the person charged with it possesses the special aptitudes suited to the high mission which he is called to fulfill, and throws aside, as far as he may, mere dogmatic questions. He should preach repentance with power and skill, set forth the divine mercy, and aid the prisoners in that self-communion which is the first step toward moral regeneration. Prisoners in whose heart the religious sentiment is not extinguished at the time of their entrance are easily impressed by the exhortations of the chaplains; on the other hand, such as do not possess it offer to the instructions of religion a soil arid and ungrateful. Among prisoners we often encounter self-decep-

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tion and a tendency to hypocrisy; nevertheless, it often happens that individuals who repudiate or are ignorant of the Bible end by finding in its pages the consolations of which they are in pursuit.

XXI. Persons of both sexes, not connected with the administration, are admitted into the prisons to labor for the moral improvement of the prisoners. In the cantons which have new penitentiaries, such persons are authorized to visit the prisoners in virtue of decrees of the legislative authority. This is especially the case with members of aid societies, who have free access to the prisoners whom they seek to succor. The number of these benevolent visits is relatively few even in cantons where penitentiary reform counts many adherents. Such visits, however, ought not to be allowed without many precautions.

In some of the more modern establishments it is only the officers themselves who take part in the moral education of the prisoners.

In the female penitentiaries lady patronesses are more frequently met with, especially in the cities which were visited in 1839 by Elizabeth Fry, and where, at the instance of that good and charitable woman, ladies' aid societies were organized to console, to place, to watch over, and to sustain criminal women. At Zurich, where a society of this kind exists, the lady patronesses give to the female prisoners in the penitentiaries regular lessons, and take charge of their religious instruction.

XXII. Sunday-schools, properly so called, do not exist. Public worship is, on that day, celebrated in the prisons, or at least the chaplain makes a visit to the prisoners.

At Zurich the pastor holds a catechetical exercise in the afternoon, and afterward an instructor gives a lesson in sacred music.

XXIII. In most of the penitentiaries the week-days are so filled up with labor, school, exercise, and study, and Sunday morning by worship, that it is thought expedient to leave to the prisoners the free employment of Sunday afternoon. It is in these hours that they are able to write letters to their relatives and acquaintances. The frequency with which they are permitted to write letters differs in different cantons.

XXIV. In the establishments where the progressive Irish system has been introduced, prisoners of the middle class can write letters every two months, those of the higher class every month. But an extension of this favor is often granted, especially in cases where the correspondence is of such a character as to draw closer the ties of family, to exert a good influence, and contribute to the moral cure of the prisoner. This powerful means of moral reformation is more or less neglected in establishments where the organization is imperfect.

As the letters pass under the inspection of the director, his eye sometimes detects sentiments which have their taint of hypocrisy; but in spite of that, the correspondence of the prisoners manifests a strong family affection, and awakens tender household memories.

XXV. The visits of relations and intimate acquaintances are permitted the same as correspondence, and are most carefully regulated in the prisons where penitentiary education receives the greatest attention.

The internal regulations of different penitentiaries grant the indulgence of visits more or less frequently, but the average is about once a month. As in the case of correspondence, an extension of this is often accorded when the visits are found to have a salutary effect.

XXVI. The visits are received in the presence of the director, or, in his absence, in that of the chief keeper. The design is to supervise the interview. The director or his deputy place the visitors and the prisoners

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as much as possible at their ease, so that these latter may look upon them as friends in whose presence they may converse freely.

XXVII. As a general thing, the extension of the privilege of correspondence is more readily granted than that of visits, since the latter do not always have the good effect which might naturally be expected from them. Still, it sometimes happens that they have an excellent influence, especially on prisoners who believe themselves forgotten, ignored, and abandoned by the members of their family, and who see them approach in spirit of forgiveness.

Besides, the visits enable the director to understand better the character of the prisoner and the circumstances of his family, and sometimes enable him to lay his plans with greater certainty and efficacy in the interest of these latter.

XXVIII. The number of prisoners able to read at the time of their commitment may be estimated at 17 per cent. of the annual average number of the criminal population. In a number of cantons the convicts are not examined upon this point on their entrance into the establishment, so that the exact proportion cannot be stated.

Mr. d'Orelli gives the following figures:

Lucerne, out of 850 prisoners, 119 illiterate.
Schwytz, out of 27 prisoners, 9 illiterate.
Glaris, out of 31 prisoners, 1 illiterate.
Appenzell, J. R., out of 5 prisoners, 4 illiterate.
Bâle-ville, out of 298 prisoners, 3 illiterate.
Saint Gall, { criminals, out of 142 prisoners, 25 illiterate.
correctionals, out of 213 prisoners, 1 illiterate.
Argovie, out of 316 prisoners, 135 illiterate.
Tessin, out of 40 prisoners, 16 illiterate.
Geneva, out of 42 prisoners, 23 illiterate.

This table is incomplete, and the numbers indicated by it cannot be taken as a basis for estimating the degree of scholastic education of the prisoners.

We place more reliance on the following figures, furnished by the reports of the penitentiaries of Lensbourg, Saint Gall, and Neuchâtel:

Places.	Total number of prisoners.	Illiterate.	Per cent.	Inferior education.	Per cent.	Passable education.	Per cent.	Good education.	Per cent.
Lenzbourg	533	63	11.8	187	35.1	245	46.0	38	7.1
Saint Gall	1,286	668	51.9	194	15.08	347	26.9	77	5.9
Neuchâtel	146	18	12.3	101	60.9	27	18.4	.....	.....
Average	.....	.....	25.3	.....	36.9	.....	30.4	.....	4.3

These figures do not show the general state of public instruction in these three cantons, for a considerable part of the prisoners, especially in the canton of Neuchâtel, are foreigners.

But it is to be observed that although primary instruction is obligatory in Switzerland, (with the exception of Uri and Geneva,) and in fourteen cantons is also gratuitous,* it nevertheless happens that a certain

* Switzerland expends each year, as well for its primary as for its secondary and higher schools, the sum of twelve and a half millions of francs. The expenditures for education form one-seventh of the total budget of the Confederation and the cantons.

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number of children escape the supervision and control of the school authorities, and reach the age of sixteen years without having regularly attended the lessons of the schools.

Many, after leaving school, neglect reading and intellectual recreations to such a degree as to almost entirely forget what they had previously learned. Thus one is astonished to see among the prisoners, who figure in the preceding table, in the "inferior" class, individuals who read with difficulty and in such a manner that reading cannot be resorted to as a recreation, and who can only write their own names.

The knowledge of arithmetic is also very limited in this class of "inferior," and the knowledge of geography and history is almost nothing, even among those who are placed in the table under the heading of "passable."

XXIX. Prison-schools are organized in the penitentiaries of Saint Jacques, (Saint Gall,) Lenzbourg, (Argovie,) Neuchâtel, &c. In many other establishments lessons are given by the chaplain. It even happens that these duties are confided to a prisoner if he is a teacher by profession, or if he possesses the necessary knowledge and aptitude. In the penitentiary of Zurich the school, which has been closed for some time, will be immediately re-opened. Instruction is a good deal neglected in the prisons of some of the cantons where the system is patriarchal, and in others where associated imprisonment by day and by night is still in use.

XXX. In penitentiary establishments in which schools are opened, all the prisoners, except those who are excused by age—above forty-five to fifty years—and those subjected to the cellular *régime*, attend lessons in classes. The prisoners receive, on an average, from four to five hours' schooling per week. Those who are in the cellular stage are visited by the instructor in their cells, and there commence their course of instruction.

XXXI. In the well-organized penitentiaries, the degree of education of the prisoners is verified at their entrance into the establishment. The result of this examination shows the necessity of maintaining three classes, whose programme corresponds to that of the three degrees of primary instruction. In the lower class the elementary branches are taught, and in the middle class progress is gradually made toward those branches which are taught in the higher class.

In the programme of the best-organized penitentiaries we see introduced even mathematics, physics, and technology, so far as these sciences are applied to arts and trades; even the modern languages are taught, French in the German penitentiaries, and German in the penitentiaries where French is the vernacular, (Neuchâtel.) Sometimes prisoners are permitted to take lessons in English, and often in linear drawing.

The progress made differs much in the case of different prisoners. Many are remarkable for their zeal and power of acquisition, while others advance but slowly. The organ of thought, little accustomed to being used, has lost its force. The power of memory is often wanting, and the result in these cases is a stupefaction, which leads to indifference. Still, the average progress made is highly satisfactory, especially in the case of juvenile delinquents, for whom, after all, this supplementary and tardy instruction can alone have any very great importance after their liberation.

XXXII. Circulating libraries are found in all the prisons. In those of the cantons where prison discipline is little advanced the number of books is limited, and works exclusively religious predominate. In the penitentiaries which are better organized the libraries are composed of

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moral and religious books, of works of general history and the history of Switzerland, of biographies, of travels, ethnography, natural history, of works on mechanics, agriculture, belles-lettres, &c., &c. Romances of a moral character (above all those of the Swiss authors, Bïtzius, Gottfried Keller, Urbain Olivier, Fritz Berthoud, Louis Favre) are not excluded.

The library of the penitentiary of Zurich, for example, possesses 800 works, consisting of 1,500 volumes; that of the penitentiary of Neuchâtel, though of recent creation, counts 500 volumes; that of the penitentiary of Saint Jacques has also a rich and varied collection of moral and instructive works. This establishment, like that of Zurich, Argovie, &c., has, in addition, a collection of special works, designed for the employés of the penitentiary.

XXXIII. The prisoners read, relatively, a great deal, in the penitentiaries where they pass Sunday in their cells, and where they have at their disposal a variety of works. They generally prefer moral tales, such as those of the authors just named, and those of D'Erckmann Chatrian and of Henri Tschokke; next come narratives of voyages, biographies, Swiss and general history, and works of popular science, (discoveries, inventions, technology, &c.)

Reading is found to have a very beneficial effect upon the prisoners. It enlarges the circle of their general knowledge, and, by fuller explanations of what they had learned in the way of routine, it develops also their practical knowledge.

It is by keeping their minds continually occupied by labor, or by moral and intellectual recreations, that that self-respect is oftenest awakened in prisoners which constitutes the best guarantee against self-abuse. These elevating and noble agencies calm an ardent imagination, and often put to flight ideas inspired by base passions and by vicious and criminal sentiments.

XXXIV. The greater part of the modern prisons, and of the old ones which have undergone recent changes in their construction, have a system of sewers which, in a hygienic point of view, are open to no serious objection. The system of pits prevails still, and it is only in the recent penitentiaries (at Lenzbourg and Neuchâtel, for example) that we find a system of drainage that leaves little to be desired. At Zurich, by the side of pits and *latrines*, arranged on the plan of Duspetian, (*Architecture des Prisons*,) is seen the system of movable vessels and of pipes for carrying off liquid substances.

XXXV. The water supplied for the use of the prisons is, for the most part, sufficient in quantity. The old prisons have each at least one fountain in the court. The penitentiaries of recent construction are abundantly supplied with water, which is distributed into all parts and to all the stories of the building.

At Zurich, for example, the penitentiary, which occupies the buildings of an old convent, has a spring of water which is reputed the best in the city. This establishment is also furnished with pipes by the company which supplies the city with water.

The penitentiary of Lenzbourg has, like that of Zurich, a spring which enables it to distribute water *ad libitum*. That of Neuchâtel receives its water from the city company, and has at its disposal, for an average of seventy prisoners, ten to twenty thousand liters for each twenty-four hours. The quality of the water is for the most part good.

XXXVI. A system of ventilation other than the doors and windows is found only in the modern penitentiaries, such as those of Lenzbourg and Neuchâtel. In them the ventilation is combined with a system of

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heating. Each cell is furnished with a ventilation pipe, whose opening is in a recess at the side of the door of entrance at the bottom of the wall; a recess closed on the side of the corridor by a little iron door, and in which is placed a water-closet, having a hydraulic fastening. Each pipe is in communication with larger condensing conduits, which communicate directly with the great chimney of the steam-boilers; this draught-chimney, about six feet in diameter and ninety or a hundred feet in height, incloses an inner one of iron, eighteen inches in diameter, which produces a powerful draught. A special furnace is so placed as in summer to heat the inner iron chimney, with the object of keeping up the ascending current, and increasing, as may be needed, the ventilation. The vitiated air thus drawn out from the cells carries off, in passing the recesses mentioned above, the emanations that have been generated there.

XXXVII. The best ventilation would be of no avail, especially in prisons where the aggregation of prisoners is relatively large, and where the cells and dormitories are not spacious, if means were not taken to insure their cleanliness. In all the prisons one or more prisoners are detailed to sweep and clean the corridors, the stairs, the courts, the water-closets, the workshops, the doors, and the windows. The special supervision of this important service is confided to the chief keeper.

In the cellular penitentiaries, each prisoner is charged with keeping his cell and its furniture in a condition of perfect cleanliness. The flagging of the cells of the penitentiaries of Lenzbourg, Bâle, and Neuchâtel is of asphaltum, which makes it easy to keep them clean. The yards of the cells are whitewashed every year or every two years. If their condition requires such a reparation before the regular time, it is done at the expense of the prisoners.

A clean cell and well-kept premises produce on prisoners accustomed to live in filthy apartments a hygienic and moral influence.

XXXVIII. Personal cleanliness is not neglected in the well-organized penitentiaries.

On his entrance into the establishment the convict receives a bath, and after having been examined by the physician, changes his clothing, often foul and filled with vermin, for the prison garb. The dress of the prisoners, in the modern penitentiaries, has nothing of a degrading character; the greater part of the cantons have continued, for prisoners, the striped costume.

The prisoner finds in his cell a wash-basin and towel; soap is furnished gratuitously, or at a very slight cost to the prisoner. A punishment is inflicted on those who neglect to wash the face and hands, to comb their hair, to brush their clothes, &c. The prisoners are shaved every eight days; their hair is cut once in six months. The wearing of the beard is permitted as a reward to those who distinguish themselves by their good conduct, and who, having reached the higher stage of penitentiary education, show themselves worthy to wear the token of manhood.

The body-linen, the pocket-handkerchiefs, the working-aprons, and the cotton stockings, are changed every week; cravats and woolen stockings every fifteen days; the sheets every month in summer, and once in six weeks in winter.

The prisoners take a bath regularly every month, (Neuchâtel,) and every two or three months in other modern penitentiaries.

The prisons which have no heaters to prepare the baths offer, as regards the cleanliness of the prisoners, conditions least favorable.

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XXXIX. The privies are still very primitive in the old prisons, where association by day and by night still exists. They are adjacent to the hall, and are separated from it only by a door. In others are found large glazed earthen vessels, with covers more or less tight, which are regularly emptied into the adjoining *latrines*.

In the cells of the modern penitentiaries we find, in the recess indicated above, enameled iron vessels, whose cover closes hermetically. These vases are emptied regularly by a prisoner charged with this service. They are voided into the adjoining *latrines*, or into a movable pit, which is afterward emptied into another, that is immovable, at some distance from the buildings.

Workshops have privies situated in an angle, and isolated by one or two doors, which are sometimes glazed.

The water-closets in modern penitentiary establishments are placed on the north side, separated from the cells; they have basins provided with a deodorizing apparatus, and are abundantly supplied with water for purposes of cleansing. In the other prisons the privies fulfill only to a limited degree the conditions required by sanitary science.

XL. The method of lighting by gas has been introduced into the penitentiaries of Zurich, Bâle, Neuchâtel, and Saint Gall. Every cell is provided with one burner, which may be closed by a stop-cock placed outside the cell. Thus all danger of suffocation or attempts at suffocation is prevented.

At Lenzbourg petroleum is used for lighting the cells and the workshops. In winter, during the evening of Sunday, the prisoners are also permitted to have light.

In other establishments only the workshops are lighted with gas, (Geneva and Lausanne.)

Finally, in the prisons of an inferior order we find the petroleum lamp or the simple candle, as a means of lighting the workshops and the common dormitories.

XLI. The heating, as the lighting, of the prisons differs very much, as they are of old or recent construction, and as the system of prison discipline is more or less advanced.

At Saint Gall, Lenzbourg, Bâle, Neuchâtel, and Zurich are found furnaces which warm, by steam, all the cells and other parts of the establishment. The detention prison of Neuchâtel is warmed by means of a hot-air furnace. Heating by steam is, as we have said, combined with the system of ventilation. The tube which is designed to warm the cell is a simple enlargement of the pipe. It is placed vertically in a recess, and is separated from the cell by an iron plate, perforated with holes, to allow the heat to pass through. On the side of the corridor there is an opening, opposite the tube, by which the amount of cold air to be admitted may be regulated.

In the greater part of the prisons we find ordinary stoves, made with varying degrees of excellence, and the heating is effected by means of wood or peat.

The penitentiary of Tessin, which is situated in a warm climate, has no system of artificial heating.

XLII and XLIII. Iron bedsteads are used in many of the penitentiaries. At Lenzbourg, Bâle, Neuchâtel, and Geneva they are fastened to the wall on one side, and are movable, so that they can be turned up and padlocked. Elsewhere, most commonly, the beadstead is of wood.

Everywhere the beds are composed of a paillasse, or of a sack filled with cow's hair or moss, of one or two linen sheets, of one or two woolen

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blankets, in summer, of two to four, in winter, and of a bolster or pillow filled with grass or straw.

XLII, *bis.* The dietary of the prisoners varies much in the different cantons, and according to the importance which is attached to penitentiary training. Where the moral reformation of the prisoners is not made the principal aim of the imprisonment, the dietary is but little varied, and is not sufficient to restore the losses caused to the bodily organs by hard labor. Meat seldom figures in the bill of fare, (in some prisons the prisoners have it only twice a year.) Prisoners long subjected to such a diet suffer more or less from a deficiency of blood. In proportion as penitentiaries become better organized and administered the dietary is improved, and substances containing nitrogen form a larger proportion of it.

The number of daily meals is three. Breakfast consists, in most of the prisons, of gruel or oatmeal porridge; and the quantity is, on an average, from a pint and a half to a quart.

In French Switzerland (at Neuchâtel, Lausanne, and Geneva) the prisoners receive from one-half to three-quarters of a liter of coffee, (*café au lait*). At Lenzbourg the breakfast consists on each alternate day of soup and coffee.

Dinner consists, once a week or oftener, of a soup (three-fourths to one liter) prepared with bread, pulse, or roots, or, according to the season, with meat. For the preparation of this meat soup, there is allowed 250 to 500 grammes of meat, without bones, per man and per week. In certain penitentiaries (Lenzbourg, Zurich, &c.) the quantity of meat authorized is spread over several dinners during the week. The meat is cut into little morsels and is distributed with and in the soup. In other penitentiaries it is given as a ration and by itself. At Lausanne there is added to the half pound of meat four ounces of raw bacon. At Geneva there are given on Sunday 250 grammes of boiled beef, and on Thursday the same quantity of hashed pork, prepared with potatoes. The distribution of this meat ration takes place, in certain establishments, on Tuesday and Thursday (Neuchâtel) of each week, so that these more substantial and nutritious meals may fall in the midst of the working days.

The evening meal consists of a soup prepared with rice, with barley or oats, with wheat flour, or with sea-moss, with or without the addition of potatoes or maccaroni.

The quantity of bread allowed to each prisoner varies from 750 to 800 grammes a day. Fresh water is the ordinary drink.

As a general thing prisoners in health are not supplied with wine. In some establishments there is accorded to those who have reached the higher penitentiary stage an authorization to furnish them at their own expense a ration of milk or of supplementary or extraordinary solid food.

Those who are engaged in toilsome labor receive a supplementary ration of milk, (Zurich, Neuchâtel,) and, in very exceptional cases, of wine, (Lenzbourg).

The choice and combination of aliments which should form the bill of fare of the three daily meals are but rarely regulated in such manner that the diet of the prisoners is varied as much as it might be, and that the food consumed in twenty-four hours contains the nutritive, nitrogenous substances in their just proportions.

A man insufficiently fed is little disposed to submit himself to the reformatory influence of the better penitentiary education.

XLIV. The hours of labor vary according to the kinds of occupation

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introduced into the different establishments. Where a large number of prisoners are engaged in agricultural labors or on public works there is less regularity than in penitentiaries where industrial labor predominates. Still it may be said that the number of hours of daily labor is, on an average, from ten to twelve.

In summer (from the 1st of April to 30th September) work begins at 5 o'clock in the morning, and in some establishments a half hour later. In winter (1st October to 31st March) at 5½ or 6 o'clock. On Sundays and feast days the signal for rising is given a half hour or an hour later than on working days.

Work is regularly suspended at 7 or half past 7 o'clock a. m., half an hour for breakfast; at noon, an hour for dinner; and in the evening, a half hour for supper. At a quarter past 10 a. m. there is very generally granted a recess of a quarter to half an hour. After the cessation of work, which occurs at half past 7 or 8 o'clock p. m., the prisoners have still a half to three-quarters of an hour at their disposal for intellectual occupations, but only in penitentiaries where they pass the night in separate cells.

An hour of exercise and an hour of school complete the day's programme. This last hour should be curtailed in those penitentiaries where there is no schooling, and where only an hour or two on Sunday are given to this object. The hour of exercise is accorded only to those who work in the cells or in the shops.

In the modern or reorganized penitentiaries, the average number of hours of labor is twelve; that of recreation (exercise, school-lessons in cell, reading, &c.) is four, to which must be added the hours of Sundays and feast-days. These last are more or less numerous according to the religious creed.

XLV. In regard to the treatment of sick prisoners: The above programme is applied only to prisoners in health. Those who are indisposed or sick are, on the order of the medical officer of the prison, excused from work.

Slight indispositions are treated in the cells or in the common dormitories; those more seriously sick receive medical attention in the infirmary, which is found in the penitentiaries of the two higher classes indicated at the commencement of this report.

The infirmary, presided over by the physician of the establishment, who has under his orders an officer detailed to duty therein, leaves little to be desired, especially in the modern penitentiaries. There is generally found there a small dispensary, and everything that is necessary for medical treatment.

Prisoners seriously ill cannot receive attention in the old prisons. The sick in this case are transferred to a hospital.

Prisoners who present symptoms of mental alienation are conveyed to an insane asylum.

XLVI, XLVII, XLVIII.—The diseases most common are inflammation of the bowels, bronchitis, inflammation of the pleura and lungs, rheumatic affections of the joints and muscles, pulmonary consumption, enlargement of the lymphatic glands, and diseases of the nervous system. Contagious diseases, typhoid fever, syphilis, the itch, &c., are always imported; and their number, especially venereal affections, chronic complaints, and the itch, are relatively numerous in some of the cantons.

At Lenzbourg the number of the sick varies between 2 per cent. (light cases) and 1½ per cent. (cases more serious) of the days of imprisonment. During the last six years this penitentiary has registered nine-

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teen deaths, which is about 3 per annum on an average of 370 prisoners. Of the five who died during the year 1870, three owed their death to pulmonary phthisis.

In the penitentiary of Bâle we find, in 1867, 2.85 per cent. of days of sickness. Of 330 prisoners there were 126 cases of sickness, and two deaths, (apoplexy of the lungs and consumption of the liver.)

Zurich, with an annual average of 407 prisoners, has had, during the last six years, sixty-four cases of sickness, which is 15 per cent. of the whole number; or, in other words, 26 per cent. per annum of the average daily number of prisoners, which was 241. In this penitentiary the number of prisoners who died was 6.3 per annum, being 1.54 per cent. of the prisoners present during the year, or 2.61 per cent. of the average daily number.

The penitentiary of Geneva indicates 5 per cent. as the proportional number of its sick. That of Lausanne gives 3 per cent. as the average annual number of deaths. Of 307 prisoners who underwent their punishment in this establishment, there were 3,497 days of sickness, out of 63,217 of imprisonment; twelve persons alone counting about 2,000 days. The cases of chronic maladies cited are, phthisis, pleurisy, and scurvy. Four deaths occurred, two having been caused by pulmonary phthisis, and the other two by an affection of the heart and pulmonary œdema. There was one case of insanity.

The annual report of the penitentiary of Berne, for 1867, shows, out of an average daily number of 428 prisoners, 176 sick, who were treated in the infirmary, and 14 deaths, three of which were from pulmonary phthisis and two from pneumonia.

The number of deaths in the penitentiary of Saint Gall, from 1858 to 1863, during which years 1,286 prisoners were received into the establishment, amounted to 70.

At Lucerne, the average number of days of sickness was, in 1867, 25 to each prisoner for the year.

At Schaffhausen, there were 545 days of sickness out of 9,943 days of imprisonment.

The frequent catarrhal affections of the organs of digestion (dyspepsia, diarrhœa, colic, &c.) are, in a great measure, due to the too great uniformity of the living, and the want of sufficient exercise in the open air, under the vivifying light of the sun. These injurious influences, added to sadness and remorse, give rise, secondarily, to that prison scrofula which is observed, in proportions more or less marked, in the different penitentiaries, and which often terminates in pulmonary phthisis.

During the three years, from 1868 to 1870, two suicides are noted at Lenzbourg, and fourteen cases of insanity, more or less grave, which were ascribed less to the imprisonment than to a hereditary or individual predisposition and the moral influence of remorse.

At Neuchâtel there were observed during the year 1870, out of 146 prisoners, two cases of insanity, one of which had already been treated in a hospital, and the other was occasioned by drink.

At Saint Gall, from 1858 to 1863, there were nine cases of insanity (six men and three women) out of a prison population of 1,286.

If there are observed in the prisons pulmonary phthisis and other diseases in proportions which demand serious examination, these establishments, and particularly those of recent construction, seem, on the other hand, to present a remarkable freedom from epidemic diseases. When the cholera prevailed at Zurich, not a single case developed itself among the prisoners. It was the same at Lenzbourg during an epi-

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demic of measles which prevailed in the neighborhood, and by which adults were attacked. At the time of the entrance into Switzerland of the army of Bourbaki, there was established, close to the penitentiary of Neuchâtel, a lazaretto for persons affected with varioloid; and though the penitentiary establishment was required to furnish meals to the sick and to their nurses, and to apply disinfectants to the bedding, no case of small-pox occurred in the prison. It is true that a general re-vaccination had taken place.

Similar observations were made in the penitentiary at Bâle.

XLIX, L, LI, and LII. The distinction between penal and industrial labor is made, in the Swiss prisons, by law only in the cantons where there still exists the system of the old hard-labor prisons, in which a certain class of prisoners are subjected to public labor, viz, in sweeping the streets, making roads, diking rivers, agricultural labors, &c., &c.

This distinction is not made in the penitentiaries in which the reformation of the prisoner is proposed as the end. Doubtless many kinds of labor are disagreeable and little attractive, and the persons engaged in such labors would not voluntarily submit to them if they were free; these labors thus acquire a penal character. In some of the penitentiaries prisoners are sometimes subjected to labors of this kind on their entrance and during the continuance of the first part of their cellular stage, or those are thus employed who, from the intermediate stage, have been returned to their cells; or, again, the indolent, the intractable, &c., &c.

This penal labor is a sort of disciplinary punishment. The labors belonging to this class are: The sawing and cutting of fire-wood, the plaiting of straw, the culling coffee, the manufacture of envelopes and cornucopias, of wooden boxes, &c., &c.

Nowhere is there found in Switzerland a penal labor of the character of the tread-mill.

Hard, ignominious public labor, such as still exists in some cantons, is not unfavorable to physical health, but has a bad moral effect.

The penal labor introduced into our modern penitentiaries as a light disciplinary labor is applied only temporarily; it is not injurious to the health of prisoners, and, as it often produces *ennui*, they seek to regain the confidence they had lost, so as to be admitted to more interesting and more profitable labor.

We find in the greater part of the penitentiaries various branches of industry carried on, among which the more general and the more important are: Weaving, shoe-making, tailoring, carpentry, varnishing, upholstery, cooperage, working in wood, brush-making, locksmithing, blacksmithing, working in tin, book-binding, paper-ruling, lithographing, watch-making, turning, basket-making, laundry-work, embroidery, and knitting.

For persons sentenced to a short imprisonment: the stuffing of chairs, the making of slippers, the manufacture of mats, of sieves, of bee-hives, of envelopes, of paper monkeys, and of wire trellis-work. Then come domestic labors of various kinds, and office occupations.

LIII, LIV, and IV. Industrial labor in the prisons of Switzerland is managed by the administration itself. The attempts which have been made in some prisons to let the labor to contractors for a fixed daily sum have been very speedily abandoned. Orders are received in the penitentiaries. The raw material is furnished by the administration or by those who order the work; the tools belong to the establishment. The keepers, who act at the same time as foremen, superintend the

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work, and calculate the value of the workmanship and of the raw material employed. Account is taken in this calculation of the prices current. Everywhere they endeavor to deliver merchandise carefully manufactured; and thus, as a general thing, the industrial products of our prisons are in good repute.

Preference is given in the modern penitentiaries to the management of the administration over that of contractors in the interest of penitentiary training.

The administration, being supreme, can introduce a greater variety of industries, and suit to these latter the different aptitudes presented by the prisoners. The consequence of the distribution of the prisoners on a larger number of industries is, that each branch is restricted to a relatively small number of workmen, and hence free labor has no occasion to fear an injurious competition. We endeavor to create a demand for the products of prison labor, rather by the excellence and solidity of the manufacture than by the cheapness of the price. Were it otherwise, the penitentiaries which ought to be, at the same time, industrial schools, would be turned aside from their proper end. In Switzerland it is found that penitentiary training is incompatible with the system of letting the labor of the prisoners to contractors. It is the administration alone that can feel an interest in teaching a trade to every prisoner during his stay in prison, so that at the time of his liberation he may be independent, and able to gain an honest living.

LVI. The number of prisoners not having a regular business at the time of their commitment is relatively considerable. Nevertheless, the tendency is shown to be toward a diminution, if comparison is made between the results of statistics for the last twenty years in the penitentiary of Saint Gall. This belongs, evidently, to the progress of civilization.

By including in this category domestic servants, day-laborers, and people without any occupation, without homes, we obtain the following figures:

Domestic servants form 33 per cent. of the total number of prisoners; day-laborers, 9 per cent.; vagrants, 4 per cent.; making an aggregate average of 48 per cent. This average varies somewhat in various cantons, according as any particular industry is there more or less developed, and the population more or less floating. It must be remarked that among those who, when they enter the prison, are artisans or industrial workmen, many have but accomplished an insufficient apprenticeship; so that, of 50 per cent. who claimed to have learned a trade, there is scarcely a fourth part who can produce a respectable piece of workmanship.

LVII and LVIII. The preceding figures show clearly that the want of a trade is not without its influence in the law which controls the causes of crime. Hence it is sought in all the penitentiaries, particularly in those more recently built and organized upon a rational plan, to give a trade to the prisoners, and above all to juvenile delinquents, to those who have to undergo an imprisonment of one or several years. In all the penitentiaries, it has been remarked that numbers of the prisoners acquire, in a short time, the ability to do that which free workmen would be able to execute only after a long apprenticeship.

Apprenticeship to a trade, which requires a certain degree of intelligence, and is, at the same time, to the taste of the prisoner, is one of the principal agencies in reforming him. Without industrial labor of this kind, no satisfactory result can be expected from a penitentiary-system, and relapses will be inevitable. A trade learned in the estab-

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lishment is worth more, as regards the support and succor of the prisoners, than a patronage society. It is well understood in the cantons somewhat advanced in penitentiary science that it is important, in order to prevent relapses, not only to make the prisoner an able workman, but also to teach him during his incarceration to help himself. In this view, there have been introduced in most of the prison regulations arrangements by which zeal and diligence in labor and the habit of saving are stimulated. The scale of the *peculium* rises, as has been said above, in many of the establishments with the augmentation of labor. In the better organized penitentiaries the further effort is made to attain this result by a careful apprenticeship to the trade chosen by the prisoner, by making him acquainted with the nature of raw materials, the places from which they are obtained, and their market value; also with the tools and machines employed; the price-current of the articles manufactured; and by teaching the manner of calculating the value of the workmanship. The prisoners are more or less associated with the administration through their industrial labors. If, by their good conduct and their aptitudes, they come at length to deserve the necessary degree of confidence, they are called to fulfill the functions of foremen.

There is thus afforded to every prisoner the opportunity of developing and manifesting his power of initiative.

Technical works and journals are placed in the hands of the workmen on different branches of industry. Writings of the character of Franklin's Poor Richard afford material assistance in this system of penitentiary education.

LIX. But all these salutary influences are lost in the case of prisoners sentenced to a short imprisonment. The directors of the Swiss penitentiaries are unanimous in regarding repeated short sentences for minor offenses as a pernicious judicial practice, which is followed without reflection. The sentiment of justice, as well as the moral reformation of the prisoner, requires that the repression be more serious and more adequately protracted in the case of individuals who take on the habit of crime, and who threaten to make it the basis of their character.

The effect of these short imprisonments becomes worse on each successive conviction. The recidivists fall deeper and deeper, and the prison cannot lift them up. During the short stay they make in the penitentiary establishment, it is impossible to teach them a trade, or even to make them apt at work.

The recidivists sentenced correctionally have more or less lost the moral sense and self-respect. The influence of the penitentiary education cannot affect the individual of this class who, on entering the establishment, counts the exact number of days which separates him from freedom.

These subjects undergo, more or less patiently, the restraint imposed upon them; they are indifferent, and little heed the present or the future which awaits them.

On the other hand, too protracted imprisonments (twenty to twenty-five years) plunge the prisoner at last into apathy and despair.

LX. The proportional number of recidivists can be given only approximately. The statistics in the different cantons are not made out in a uniform manner.

In some establishments, account is made of all prior sentences—police, correctional, and criminal; in others, they embrace only those which have been pronounced within the canton, or even notice only the punishments undergone in the same establishment. The greater part of

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the cantons expel from their territory liberated prisoners of foreign *birth*, and give themselves no further trouble about them; so that it may happen that the cantons whose penitentiaries contain numerous non-residents of the canton may have fewer recidivists to be registered. In spite of the defective state of the statistics, we may estimate an average of 30 to 45 per cent. as the proportion of recidivists in cantons where the penitentiary system has made least progress, and from 19 to 25 per cent. as that of the cantons whose penitentiaries are well organized.

The efficacy of a penitentiary system may be indicated, up to a certain point, by the number of its recidivists. But this rule has numerous exceptions in Switzerland. The diversity in the modes of punishment does not allow us to draw from the numbers indicated an indisputable conclusion. It would be necessary to take account of the preventive measures, which are more or less effectively applied in the different cantons.

In the canton of Argovie, (Lenzbourg,) where penitentiary education is conducted with care, there were counted, from 1865 to 1867, forty-five recidivists out of eighty-seven prisoners; and from 1868 to 1870 only forty-four to one hundred and fifty, among whom fourteen were not natives of the canton. Thus the recidivists form 25 per cent. of the criminals of Argovian origin, and 37 per cent. of those not born in that canton, making an average of 28 per cent. So that in the space of six years there was a cheering diminution in the number of recidivists, and it must be attributed, in great part, to the penitentiary system applied in that establishment, and also to the efforts made to aid and protect liberated prisoners. The correctional recidivists form, in that same canton, 50 per cent.

In the canton of Bâle-ville (one-third of the prisoners in cellular reclusion) the number of recidivists is from 18 to 19 per cent., and that figure is caused, in great part, by women abandoned to prostitution and vagrancy.

In the canton of Saint Gall, of 1,286 persons sentenced criminally and committed to the penitentiary of Saint Jacques, (Auburn,) during the first twenty-five years of its existence, (1839 to 1863,) the recidivists were 248, being an average of 19.5 per cent. This penitentiary has been, for many years, under the direction of a man as humane as he is enlightened.

In the canton of Lucerne, which possesses an old hard-labor prison, the number of recidivists rises, *per contra*, to 40.4 per cent.

The number of female recidivists is 50 per cent. in the canton of Argavie. The woman, more than the man, resists the seductions which lead to crime; but when she has once succumbed, her moral degradation is greater and more rapid than is the case with man, and her falls more frequent.

LXI. The existing codes denounce a severer punishment against prisoners convicted more than once. Some sentence them to the maximum of the punishment incurred; others add to this punishment its moiety, and even more, in excess of the maximum. Every sentence, for an offense exceeding six months, becomes an aggravating circumstance in the case of the person who, having suffered it, is prosecuted criminally.

In the cantons of Argovie and Zurich, it is only at the third relapse that the aggravation of the punishment commences for criminals, which punishment is then carried to ten years of reclusion in the first-named of these cantons. The recidivists of this class are besides subjected in the penitentiary to a cellular separation of longer duration, and even

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throughout the whole term of their punishment, if they show themselves depraved to a high degree.

This last system exists also in the cantons of Zurich, Bâle, and Neuchâtel.

LXII. Prisons for debt exist only in a few cantons, and it may even be said that, where such prisons are still found, the constraint of the body has fallen into disuse. In a number of cantons, the State authorizes the restraint of the body, in default of payment of the expenses of justice; but this imprisonment is of short duration, and often is not inflicted at all. This punishment is regarded as correctional, and has no character of infamy.

LXIII. In examining the table of crimes and misdemeanors, we observe that the number of those committed against property (petit larcenies, thefts, abuses of trust, &c.) constitute 65 per cent. of the total number; that the number of attempts against life (murders, homicides, infanticides) is 10 per cent.; acts of incendiarism, 5 per cent.; and the remainder comprises cases of counterfeiting, false accusations, &c., &c. These figures sufficiently indicate the direction followed by the will of the persons forming the criminal class. Mr. Mühler, director of the penitentiary of Lenzbourg, makes the following reflections on the causes of crime in the canton of Argovie:

The most frequent cause of crime is a malign education, which early gives to the will a fatal direction toward evil, or which, at least, stifles in the character the moral power to resist evil suggestions.

Among the correctionals the influence of an evil education is more marked than among the criminals. This is explained by the circumstance that the former are mainly recruited in the pauper class, which is deprived of everything that might give to the child a good education. Many of these correctionals have never enjoyed the family life; they are orphans or illegitimate children, who have been placed by the *commune* (we have in Switzerland obligatory communal assistance) or by philanthropic societies, with one, or, successively, with several keepers of boarding-houses. In both cases, these children are rarely in conditions favorable to their education. We find, on the other hand, among the criminals, a certain number belonging to the higher classes of society, whose education has been less neglected, who have themselves lived in favorable conditions, and who sometimes had gained an honorable position in society. Sensualism, which has been developed in them by an irrational system of education, is, in the greater number of cases, the predominant cause of their crimes.

Next, we encounter other persons who have learned a business and who have not yet arrived at that state of utter indolence which is so often remarked in the correctionals. In a higher degree than these last, the criminal prisoners have ties of family; either they are able to count on the support and succor of their relatives during their imprisonment and after their liberation, or they have a wife and children. The correctionals, on the contrary, are, for the most part, without family, without relatives, without friends, and possess neither sufficient energy nor sufficient perseverance to create for themselves a domestic hearth. The predominant characteristic of such a manner of living is levity and heedlessness, which, if other aggravating circumstances come in aid of them, (drunkenness, debauchery, &c.,) as often happens, degenerate into a depravity whose character is that of a stupid indifference, rather than the necessity of doing wrong.

Another source of crimes and misdemeanors, nearly as prolific as the preceding, is drunkenness, often accompanied by other excesses. The

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number of criminals, small and great, abandoned to drunkenness, or who at the moment of the criminal act were under the dominion of drink, is by no means inconsiderable, forming at least 50 per cent. of the total number of crimes committed by men, and this proportion is even higher among the correctionals. Governments and societies of public utility have been occupied, and are constantly occupied, in seeking out the best means to combat this vice, but they are very far from having attained the object of their pursuit. The number of misdemeanors occasioned by wine is considerable in some of the cantons, and the liberty of the wine traffic, pushed to its utmost limits, causes, in a number of these cantons, (Neuchâtel, for example,) the commission of one crime as the effect of wine to every one hundred and four persons of the population. In others, an impost upoh wine drives the pauper class to the consumption of brandy.

That which is worst in the vice of drunkenness is not the criminal act which it has directly or indirectly caused, but much more the moral waste which the drunkard gradually suffers, and which causes him to lose all perception of the most elementary laws of morality.

Happily, in Switzerland, there are generally few criminals by profession; that is to say, who are impelled toward evil as the result of a hereditary moral anomaly, or of a deplorable education. Nor is the number large of those who have become criminal by a deliberate purpose, through hatred of society and its laws, who find a fascination in crime, and who conceive that they have a right to the exercise of their vengeance. In the greater number of cases this criminal tendency is increased by drink and debauchery.

It may be admitted that all those criminal natures whose earliest movements are in the correctional domain reach at length that of crime. Anger, the absence of reflection, in a word, any sudden over-excitement, combined commonly with the influence of drink, is a frequent occasion of crime. In the majority of these cases it is observable that the moral character of the criminal had been previously, to a certain extent, vitiated.

Reverses of fortune, domestic troubles, the death of a good mother, may be an occasion of discouragement, followed by prolonged inactivity, drunkenness, and debauchery, vices which prepare the soil in which criminal thoughts speedily germinate. But such cases are less frequent among us than vulgar rapacity, sordid avarice, and the mania for litigation, which is also frequently a cause of crime of a kindred character.

Poverty and misery do not often, in Switzerland, become direct causes of crimes and misdemeanors. They act only indirectly, since, for the most part, they are the result of bad education, which is the easy road conducting to depravity of a greater or less intensity.

It often happens, again, that clothing, watches, money, are stolen, and that misery is indicated as the cause of these larcenies. But if these cases are carefully examined, it is found that want is rarely the impelling cause, and that more frequently the authors of these offenses were leading a dissolute life, and that their notions of morality were becoming weaker, if, indeed, they were not already totally effaced. Many of these petty thieves themselves excuse their crimes by alleging the destitution and misery in which they found themselves.

The following table, extracted from the triennial report (1868 to 1870) of Lenzbourg, and which may be applied to many of the Swiss cantons, gives an interesting view of the causes of crime. We transcribe it, however, under reserve, since it is impossible to classify with precision the immediate causes of crime.

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Of one hundred and ninety criminals, among whom were one hundred and seventy men, we find ninety-two, equal to 42 per cent. of the men, who were addicted to drunkenness, or who committed their crimes in a state of intoxication. The proportion is 60 per cent. among the correctionals.

Of one hundred and ninety-two criminals thirty-nine, or 15.6 per cent., were criminals in the true sense of the word; forty-one, or 21.3 per cent,, were in a state of moral decay; eighty-five, or 44.3 per cent., became criminals through levity of character; thirteen, or 6.7 per cent., became so as the result of the wretched condition in which they lived; twenty-three, or 12 per cent., committed their crimes in a moment of sudden excitement. Of two hundred and forty-four correctionals nineteen, or 7.8 per cent., were criminals in the proper acceptation of the word; one hundred and five, or 43 per cent., were in a state of complete moral prostration; one hundred and six, or 43.4 per cent., had committed the fault through levity of character; twelve, or 5 per cent., in a moment of passion; and two as the result of unfortunate circumstances.

If the proportion of those addicted to crime, as a profession, is higher among the criminals than among the correctionals, that is compensated by the inverse proportion of correctionals who have lost all sentiment of duty and of honor.

The number of crimes would be reduced among us to its minimum if the education of orphans and of illegitimate and unfortunate children were the object of a solicitude more concentrated, more steady, and more methodical. Modes of relief are not wanting in Switzerland; we have communal assistance; we have numerous and well-inclosed almshouses; and above all, we have voluntary aid, which is designed to supplement that of the communal corporations. These last are not sufficiently careful in choosing the familes to which they confide the education of orphans and deserted children. Honest families which, from charity and a true Christian devotion, receive under their care such unfortunates, are still too rare.

Old men who need assistance are sometimes placed by the communes at boarding in poor families, where they run the hazard of becoming mendicants, vagrants, and thieves.

Primary instruction is obligatory in all the cantons except two, and gratuitous in several; yet, in spite of this, it happens in these cantons that children escape from control and do not avail themselves of the benefits of instruction. It is the same with mendicity, which is interdicted by law, but which continues still in spite of the bureaus of relief and assistance, because many persons cannot refuse alms to paupers who knock at their gates, and make an appeal to their hearts.

Gambling-houses may be said no longer to have an existence among us. That which is opened in the canton of Valais is the object of general censure, and its license will probably not be renewed. The love of gaming exists notwithstanding, and the too numerous idlers who frequent the wine-shops seek habitually diversion and excitement in gambling. Public houses of prostitution are tolerated only in a few great centers of population. Secret prostitution is by no means wanting. Finally, there ought to be named as one of the sources of crime the defects of most of our systems of penal legislation and the absence of a suitable penitentiary system in several of the cantons. Efforts are made to dry up all these sources of crime, but this labor of moral hygiene does not proceed with sufficient concert of action. In the several cantons progress is made with different degrees of slowness. The result

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is that the success of those cantons which have introduced reforms into their penal and penitentiary systems are compromised by numerous cases of relapse, coming from neighboring cantons less advanced.

In order to hasten the realization of progress throughout all Switzerland many voices have been raised, on occasion of the revision of the federal constitution, to demand, if not the centralization, at least the unification of the penal code, the promulgation of federal laws to insure the greater diffusion of education, to regulate the assistance to be given to paupers, to abolish gambling-houses, &c., &c.

These reforms will be realized some day. But such a work requires time, which indeed is demanded by the general law of human progress.

LXIV. In the prisons of Switzerland, the two sexes are represented in the following proportions: The men form an average of 80 and the women of 20 per cent. This average varies slightly in different cantons. In some the women are but 15 per cent. of the total prison population.

LXV. The study of social questions, undertaken by numerous societies of public utility, and the reports presented in the meetings of the Swiss society for the reform of the penal system and of prison discipline, have enlightened public opinion to such a degree that the legislative assemblies of most of the cantons are favorable to the propositions made with a view to the introduction of penitentiary reform into all our prisons. On the other hand, public opinion declares itself in favor of expenditures designed to improve the condition of criminals only after the state has supplied the country with hospitals, insane asylums, orphan houses, schools, &c., &c., that is to say, with all needful establishments designed for the honest poor. In all the cantons where these institutions are found, the old theory of penal repression, based on vengeance, has given place to more humane ideas, the responsibility resting on society as regards the causes of crimes is better understood, and the system introduced into most of the prisons has for its aim the reformation of the prisoners. It is true that the penal codes of many of the cantons are based on punishment, intimidation, and expiation. But despite the text of the codes, which was often written prior to the reform of the prisons, it is sought in the penitentiaries, particularly in those which we have grouped in the two superior classes, to employ agencies which may combine at once repression and reformation. While in some cantons (those of the two inferior groups) the principle of repression is alone admitted, we see the canton of Zurich setting a good example by declaring, in its penal code, October, 1870, that the application of punishment ought positively to have for its object the reformation of the criminal.

This principle, which, some day, will be applied in its whole length and breadth, dates only from yesterday. Hence we need not be surprised that the country is found in that transitional period when the principle of intimidation still struggles against the moral reform of criminals. The spirit of vengeance is not entirely extinguished; it still shows itself whenever any atrocious crime has just been committed. But the moment of indignation is transient, which shows that an immense progress has already been realized, and that its development proceeds without cessation, in spite of occasional reactionary movements.

LXVI. The favorable results obtained in the moral reformation of prisoners, subjected to the penitentiary *régime* of the modern establishments, incite the others to a revision of their penal codes.

No doubt there are many criminals and correctionals in whose case the influence of the improved penitentiary system does not make itself

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felt. As among the insane, there are incurable moral maladies; persons in whom the moral sense has been completely perverted suffer themselves to be impressed in a penitentiary only by the evil which they find there, and show themselves insensible to the good which is sought to be accomplished. On the other hand, the greater number is far from being depraved, and the moral force of those who form this class increases in the prisons. At the moment of their liberation they feel themselves reconciled to society, and they have the firm intention of regaining, by their good conduct and by honest toil, the esteem of their fellow-citizens.

It is not easy for a prisoner to carry into effect his good resolutions. He has to confront many prejudices, to conquer many obstacles, and to resist many temptations, to which he would sometimes succumb if some charitable hand were not extended for his succor.

LXVII and LXVIII. It is with a design of preventing relapses among liberated prisoners, with or without a trade, that there are formed in most of the cantons patronage societies.

The canton of Saint Gall was one of the first to give its attention to this subject.

Thirty years ago the resolution was formed in that canton to establish a penitentiary house, organized on the principle of the reformation of prisoners; but its execution was essentially subordinated to the formation of a society which should have for its mission the supervision of liberated convicts.

In the autumn of 1838 the penitentiary of Saint Jacques was finished, and on the 24th of November of that same year there was passed on criminal punishments a new law, which declared in article 6:

After his liberation, it will be the duty of every prisoner who is a citizen of the canton, or has his domicile there, to place himself, for three months at least to three years at most, under the protection of a patronage society.

On the 15th of the same month the grand council of Saint Gall adopted, in regard to the administration of its penitentiary, the following resolution:

ARTICLE VI. The commission of direction will take care that all the liberated prisoners find an honest support and be placed under patronage. In this view it will endeavor to found a special society, to which the minor council will be able to confide the care of the liberated prisoners, in conformity to a rule approved by him.

These arrangements greatly facilitated the organization of the patronage society of Saint Gall. Thus, on the 10th of June, 1839, the society was organized, and on the 21st of the same month its statutes were ratified by the minor council, which, in its letter missive, expressed the hope that it would accomplish by incessant devotion what the law could not exact.

The system on which this society was founded has undergone no modifications down to the present time, and it has even been confirmed anew by a decree of the 16th August, 1860.

It is to be remarked that the committee is authorized to hand over to the police of the canton every individual whom it is unable to keep under its supervision, or who has rendered himself unworthy of its protection—an authority which has hitherto proved almost useless.

In the canton of Zurich a patronage society was founded in 1865. It differs from that of Saint Gall, inasmuch as it is based on liberty of action, and is subject to no governmental constraint.

Its protection is granted, in preference, to juvenile delinquents, and it extends its aid not only to prisoners discharged from the penitenti-

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ary, but also to those who have undergone their punishment in a district prison.

At Saint Gall the patronage committee receives from the director, six weeks before the liberation of the prisoner, information relating to his age, his conduct, his trade, and the causes of his sentence, and decides at that time whether the prisoner is deserving of patronage, and what measures ought to be taken in regard to him; whereas at Zurich the director and the chaplain of the penitentiary, being themselves members of the central committee, are officially called upon to give it, orally, the information required, and to submit to it the propositions which they judge suitable as regards the patronage of the discharged prisoner. When that is done, the president selects from among the members of the committee, for each prisoner, a reporter charged with drawing up a paper in relation to the cases, and, after discussion, the committee takes a definitive resolution.

In order that the patron may become acquainted with the prisoner and question him concerning his plans for the future, permission is granted to visit him before his liberation.

It is admitted, in principle, that the society is not to bestow its care upon those who, morally and materially, have no need of it, or refuse it, or give no hope of improvement from it. This fact, like many others, shows that there are reforms necessary in our penal legislation in regard to the duration of punishments.

The annual reports of the central committee of Zurich show that the work of patronage is there in full activity. The patronage society of Berne, organized in 1864, owes its existence to the Society of Public Utility. Its organization does not differ in any essential point from that of the societies of which we have just spoken, and, like that of Zurich, it is based on the principle of free action.

In the report of the labors of the first year the committee makes the following observations:

> At first we had in view only the patronage of prisoners whose previous and present conduct offered sufficient guarantees. It was necessary that the first essays should not be an occasion of discouragement to the society. Our earliest efforts disappointed us. We had no success, and it was only when we had the courage to afford aid to recidivists and great malefactors that our success became complete. Although Mr. Dick, chaplain of the establishment, did not cease to speak to the prisoners of the many benefits of patronage, both in the pulpit and in his personal visits, we had only now and then an application for assistance. There is occasion to propose this question, which is worthy of a serious examination, to wit, Whether it would not be expedient that the patronage society have, by law, an official position?

In the canton of Bâle-ville it is now some years since the Philanthropical Society and the Society of Public Utility have added to their vast and laudable field of activity the patronage of prisoners sentenced criminally and correctionally. They give their attention specially to juvenile prisoners, whose moral regeneration offers a better chance of success, and they take great pains to find places for them as apprentices. Hitherto the results obtained have been highly satisfactory.

In 1835 a patronage society was formed at Neuchâtel, and for some years was actively engaged in its appropriate work. Its labors were resumed in 1844 by a new committee, which had at first the material and moral support of the government, but subsequently had no other resources than those obtained through voluntary contributions. It obtained no moral results, became disheartened, and ceased to exist during the political events of 1848.

The principal cause of these disappointments was, as we think, the

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absence of a rational penitentiary system. Hence at the opening of the present penitentiary, by a spontaneous movement, many persons residing in the six districts of the canton started the project of the formation of a patronage society for liberated prisoners. This society was organized and its regulations adopted the 6th of April, 1871.

Like all the voluntary societies, it manifests, at the commencement of its career, much zeal and enthusiasm for the object to which its efforts are directed.

The cantons of Lucerne, Thurgovia, Appenzell, Vaud, and Glaris have also societies organized similar to those of which we have just spoken.

In the canton of Argovie much zeal is shown in the patronage of liberated prisoners, and as in this canton conditional liberty is authorized by law, it has been proposed to charge the consistories, that is, the elders of the churches, with the supervision and care of liberated prisoners. But as in this canton the principle of the separation of church and state has just been decided upon, patronage will now be confided to the officers of the civil state.

Wherever they exist patronage societies aid discharged prisoners by their counsels, watch over their conduct, shield them from evil enticements, and purchase the clothing, tools, &c., which may be needed by them. They endeavor to aid their beneficiaries by procuring work rather than by giving them assistance in money.

In spite of all these efforts, the results do not correspond to our desires, and, as may be seen from what has been said, there is not sufficient unity in the organization of patronage. This is a great inconvenience, which the Swiss society for penitentiary reform is seeking to remove, by bringing into mutual relation all those persons who, in the different cantons, occupy themselves with the patronage of liberated prisoners.

LXIX. The restricted limits of the present report do not permit us to discuss the imperfections of our penal system, and of the discipline of our prisons. What has already been said gives indications of the reforms to be desired We therefore limit ourselves to a *résumé*, under the following heads, of the reforms which still remain to be accomplished:

1. The unification of the penal code, based on the principle of the moral reformation of prisoners.

2. The reform of our detention prisons for persons awaiting trial.

3. The increase of the number of reformatories for juvenile delinquents and vicious boys, and also the reform of work-houses and houses of correction for vagrants and idlers.

4. The erection of penitentiaries in cantons which have only the old-fashioned prisons, which are incapable of rational transformations. Two or more cantons might come to an agreement to establish a penitentiary in common, or they might make arrangements with a canton which already has one, or found other establishments to be used as intermediate prisons, agreeably to the progressive Irish prison system.

5. The special education of prison officers and employés.

6. The reform of the disciplinary and educational *régime* of the penitentiaries, with a view to the moral regeneration of the prisoners.

7. The direction and supervision not only of the administration of all the prisons, but also of preventive institutions, (such as public assistance, orphan houses, agricultural colonies, refuges, patronage societies, &c.,) in the hands of special officers of the government.

8. The united action of the State and voluntary philanthropic societies, and societies of public utility.

9. Finally, the perfecting of all institutions whose aim is the preven-

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tion of crime, whether in the domain of education, instruction, social conditions, &c., or of that of police and of justice.

In the name of the committee of the National Society for Penitentiary Reform,

The President-Reporter,
DR. GUILLAUME.

NEUCHÂTEL, *December* 18, 1871.

V.—ITALY.

[Translation.]

I. Every prison in Italy—whether for the punishment of criminals or the safe-keeping of prisoners awaiting trial—is under the immediate control of the minister of the interior, who places at the head of its administration a director, who is subject to his own orders.

The general direction, besides a secretary attached to the office of the chief, comprises three divisions, which make part and parcel, with the other departments, of the ministry of the interior.

The first division is charged with the direction and oversight of the *personnel* (the officers) of the prisons.

The second has charge of the prison supplies; takes care that the expenditures of the local administrations do not exceed the funds assigned to each establishment; sanctions the contracts for supplies, where they are given to private persons, as well as those for the labor of the prisoners made by the directors; and, in short, exercises in behalf of the state the vigilance necessary to insure, on the part of contractors and officers, the fulfillment of their obligations toward the government and the prisoners, and a faithful observance of the general laws of accounts.

The third division is in charge of the prison buildings, and is aided by a bureau of professional engineers, established in connection with the general direction. To this division belong also the distribution and transfer of prisoners to the different penal establishments, the size of the prisons and the different punishments to be undergone being taken into account. These dispositions are made with the special view of preventing the removal of dangerous prisoners to penitentiaries which offer facilities of escape, or to avoid overcrowding, which is always prejudicial to health and to discipline.

In connection with the general direction there is established a bureau of statistics. This gives information to the country, by the publication of an annual report, not only of the movement of the prison population, but also of the sanitary, legal, economical, and moral condition of the said population, and places the government and parliament in a position to appreciate the effects of the national penitentiary administration, of which it gives a thoroughly accurate account.

In addition to the above-named administrative functions, the director general is aided by a superior prison council.

This council is regarded as a consultative body, and its advice is taken in regard to the construction of new prison buildings and alterations in old ones, as well as in relation to administrative affairs, on which the director general thinks proper to ask their opinion. He consults them also with reference to promotion and measures of discipline relating to the officers and employés in the prisons.

This council is composed of the central inspectors—of whom two at

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least must be present to insure the validity of its deliberations; of the head of the division to whose jurisdiction belong the matters from time to time brought before the council; and is presided over by the general director of the prisons. The functions of secretary, without the right of voting, are devolved upon an officer selected by the director general.

The directors of penal establishments, detention prisons, reformatory institutions, governmental or private, male and female, as well as the directors and administrative authorities of the judicial prisons of the whole kingdom, depend upon the director general, and receive orders from him.

II. The classification of the penal establishments in Italy is as follows:

For men: bagnios 21, in which are confined criminals sentenced to hard labor for life, or for a limited term; bridewells, 11, for prisoners sentenced to the punishment of reclusion; establishments of banishment 3; houses of correction 6, for persons sentenced to simple imprisonment; special establishments 10, (classed under the general title of houses of punishment,) for persons sentenced to a bridewell, agreeably to the Tuscan code, during the first stage of their punishment.

For women: there are 5 of these, in which all the different kinds of punishment are inflicted; also, 2 detention prisons for young girls, and 1 for young boys.

For youths: government detention prisons, 2.

III. There are 2 prisons in which a system of absolute separation prevails, containing a population of 362; 2 on a mixed system, (partly Pennsylvanian, partly Auburnian,) containing a population of 582; 5 in which the Auburn system complete is used, with 2,105 inmates; 48 in which the system of association by day and by night prevails; and 2 on a mixed system, partly Auburnian and partly associated, with a population of 600, making a total prison population for the whole kingdom of 21,706.

IV. In proportion as the Italian provinces came gradually to form a single nation, the authority of the general direction was extended over the prisons already existing in the said provinces.

From this single fact of the gradual coalescing of the prisons of different states under one government, every one can understand that it was impossible at once to introduce a perfect uniformity of discipline into so many and so various penitentiary establishments. The introduction of a uniform system of prison treatment was obstructed by the differences between the penal code of Sardinia, of 1859, which extended over almost the whole kingdom, and that of Tuscany, both of which were in force at the same time. It was obstructed, also, by the old style of penitentiary buildings in vogue before the practice had become general of employing punishment as an agency in the reformation of prisoners.

Notwithstanding these differences in the penal codes, the general direction holds itself in such a position that it will not be obliged to cause too profound a shock to the service when the new criminal code is promulgated; and, in the mean time, it follows, as far as possible, those rules of discipline which have elsewhere been put to the test, and which general experience has shown to be an effective means of penitentiary reform. It is, therefore, evident that, before rejecting or adopting, definitively, any one of the various systems employed in the several provinces of the kingdom, or which have been adopted by foreign nations, the general direction of the prisons in Italy has need to collect a greater number of facts, to arrange them, and to investigate their causes and bearings. In this view it occupies itself, from year to year, with the

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study of statistics. The results of this study will, ultimately, enable it to propose to the Government a penitentiary system, which may be applied to the whole kingdom. For these reasons the general direction does not think that the time has come, in so far as it is concerned, to answer categorically the second part of the present question; that is to say, it cannot declare from mature examination and conviction its own preferences for the system proper to be adopted.

If the author of the present series of questions will carefully consider the matter he will see that the very naming of a commission, charged with the duty of studying the questions connected with modern penitentiary discipline, and of proposing their solution to the government, shows of itself that the general direction does not regard the results hitherto obtained by its own efforts as all that might be secured by the discipline which it has adopted.

But the results of the two systems chiefly practiced by us are readily seen from the character of the numerous facts furnished by our statistics. At any rate, in questions of such importance, it is but just to weigh the opinion of the directors of our prisons, which is as follows: Three-fifths of them favor the Auburn system, some of these, however, with modifications suggested by themselves; the other two-fifths incline to the system of absolute separation, with or without mitigations.

V. The funds for the support of the prisons are drawn from the general budget of the state.

The financial results of the prisoners' labor are shown in the statistics; recourse must, therefore, be had to the figures to form an accurate judgment. No doubt there is a remarkable disproportion in the economical results obtained by different establishments; but this is due to the fact that some of the prisons, situated in unfavorable localities, cannot compete with others which are placed in the great centers of population, where commercial and industrial life has a high activity.

VI. The directors and officers of the prisons, whether central or local, are named by royal decree; the keepers and foremen by decree of the minister of the interior on the proposal of the director general.

The tenure of office for the higher functionaries is for life; nor can they be removed except for causes which would render them unfit for the service, or unworthy of a place among the officers of the State. The keepers are chosen for six years; and as to the foremen, their engagements with the penitentiary administration depend in each case on special arrangements.

VII. On the general gifts of mind and character which should distinguish a good prison officer, the general direction cannot express any special opinion. It confines itself to the remark that, as a general thing, it recognizes in its higher officers a degree of aptness and competency which leads it to continue them in their respective charges. It simply adds that, beyond the needful probity, it selects in preference those who had made some attainments in juridical knowledge, who possess a more than ordinary energy and activity in their work, who are endued at once with courage and coolness, and of late those whose personal appearance is calculated to inspire a certain degree of respect in the minds of the prisoners.

VIII. To the present time no special schools have been established for the preparation of good officers to be placed in our penitentiary establishments. The general direction has thought it sufficient, as regards the qualifications of those who apply for office in the prisons, to comply with the royal decree of 10th March, 1871, and with the subsequent ministerial decree of 20th of May of the same year, which regulate

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the examinations to be undergone by all applicants for the higher penitentiary positions.

As regards the *personnel* of the keepers, the general direction has already taken steps to establish, at a few central points of the state where there exist, in near proximity, detention prisons and female establishments of different classes, certain (so to speak) novitiates, or training schools, for keepers, by way of experiment. Here it is to be hoped the pupils will be able to gain a knowledge of every branch of that difficult service with which, from the start, they need to be somewhat acquainted, if they would not injure the discipline of the establishments to which they are attached as probationers, and do, perhaps, irreparable damage to their own future career.

IX. The pension to which the directors and officers of the prisons are entitled, after a service of at least twenty-five years, is determined on the same principle as that of every other officer in the civil service of the state. Thus, when retired after twenty-five years of service, they have as many fortieths of their salary, when it does not exceed two thousand Italian livres, and as many sixtieths when it is more than two thousand livres, as their years of service.

But without regard to the twenty-five years of service there are cases of pensions granted to all classes of officers, when any of them become incapacitated by a wound or disease caused by some extraordinary act performed in the discharge of his official duties.

X. The differences, not only in the length of the sentences, but also in the judicial consequences, and in the treatment of prisoners sentenced to the different punishments, whether penal or correctional, are determined by the penal code, (lib. 1, title "Of punishments.") Our penitentiary regulations are conformed in their spirit to the literal provisions of the code, which has fixed the degree of punishment.

XI. If by the classification of prisoners is meant their assignment to different penal establishments according to their several crimes and sentences, we must answer that a complete system of classification does exist in our prisons.

In the detention prisons the following categories are, as much as possible, separated from each other; the accused; the indicted; those sentenced for terms of six months and under; those sentenced for longer periods, who are awaiting their transfer; the arrested, who are at the disposal of the authorities of public safety; those detained in transit; persons imprisoned for debt; women; and minors.

In the prisons for correctionals and reclusionaries the classification for different treatment is as follows. the idle; the laboring, including apprentices; boys; masters.

In the bagnios there are recognized four divisions, with separate dormitories for each. They are: those sentenced for military crimes or assaults; those sentenced for theft; those sentenced for highway robbery; those convicted of atrocious crimes, such as assassination, homicide, &c. Each of these four divisions is subdivided into three categories, distinguished by marks on their dress, according to their terms of sentence, from ten years to life.

XII. The general regulations of the prisons ordain that, when the council of discipline, legally convoked by the local director, is of the opinion that there is ground for invoking the royal clemency in behalf of any prisoner, and formulates its judgment, it is the duty of the said director to send the application to the general direction, which, after duly recording it, transmits the papers to the keeper of the seals, whose duty it is to submit them to the royal decision.

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Besides the conditions which naturally limit such applications to the case of prisoners of exemplary conduct, the regulations provide that the crime of which the candidate for the royal pardon was convicted should not have been one of those betokening a profound corruption and perversity of mind, and that he should have already undergone the one-half of his punishment. Moreover, the applications for pardon made by each director must not exceed the proportion of 5 per cent. of the whole prison population confined in the establishment to which he belongs.

XIII. Participation in the products of their labor is not the right of the prisoners, but is conceded to them as a gratuity. Such gratuities commence at one-tenth, and increase in inverse proportion to the gravity of the punishment assigned to the prisoner.

These tenths constitute a fund laid up against the time of the prisoner's liberation.

Apart from the gratuities just mentioned, the prisoners obtain, by way of reward, a certain amount of food in those prisons in which the labor is managed by the administration. Instead of this additional food, they have two-tenths of their disposable *peculium* in prisons where the labor is let on contract; and with these two-tenths they are at liberty to purchase for themselves additional food of their own choice, always, however, within the limits of a short list of simple eatables, at prices agreed upon between the contractor and the director, and posted in every workshop.

XIV. Other rewards granted to prisoners who are industrious and otherwise well conducted are: permission to receive visits and write letters; the use of their savings up to one-third (provided the two remaining thirds are not less than twenty-five livres) for the relief of their parents, their wife, and their children under age; liberty to purchase under-clothing, books, and tools; and finally, positions of responsibility and trust awarded them by the administration.

A reward, justly held in much higher esteem by convicts distinguished for good conduct, has been recently introduced; only, however, in the case of those who should have completed a certain part of their sentence, provided their offense was not one indicating a profound perversity, and who should have passed six months continuously without disciplinary punishment; said premium consisting in sending them to an agricultural penal colony, situated for the most part in some Italian island.

XV. The most common offenses against discipline in the bagnios are insubordination and quarrels between prisoners, (constituting a fourth part of all violations of the rules,) conspiracies, mutinies, and clandestine possession of contraband articles.

In the ordinary prisons the most common offenses are violations of the rule of silence and refusal to work.

XVI. The disciplinary punishments in use are admonitions, isolation in the cell of rigor from one to three days with ordinary bread, and with soup only once; isolation with a diet of bread and water; and isolation in a cell from one to six months, but with the legal rations. Let it be noticed that even the punishment cells are furnished with a camp-bed.

In the bagnios there are used as punishments—the hard bench; increasing the weight of the chains, (*il puntale;*) and the solitary cell.

The graver punishments cannot be inflicted by the director alone, but there must intervene a sentence by the council of discipline, composed of the president-director, the vice-director, and an officer of the prison. On the invitation of the president, the chaplain, the medical

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officer, and the superior of the sisters take part in the deliberations of the council, but without the right of voting; the lady superior being present only in the female prisons, or in male prisons in which sisters have charge of the kitchen and the wardrobe.

If the punishments awarded, even by the council of discipline, exceed three months, they cannot be applied until they receive the official sanction of the minister of the interior.

The punishments most frequently employed in the bagnois are the hard-bench and simple arrests; in the houses of correction, the cell of rigor, with bread, water, and soup once, and admonitions.

XVII. Every punishment incurred by a prisoner is entered at length in his individual register; and an abstract of it is afterward copied into the general register of the establishment to which the prisoner belongs. It is the records contained in this last register which furnish to the general direction the *data* for the annual penitentiary statistics.

XVIII. Every prison, even for persons awaiting trial, has a priest, who is its titular chaplain. As in Italy the great mass of the citizens are Catholic, there are no ministers of other creeds attached to our prisons. Whoever belongs to a different religious communion is permitted to confer with a minister of his own creed on application to the director, who cannot refuse to admit the individual named by the prisoner, unless he has reason to believe that the safety of the establishment would be thereby endangered.

XIX. Besides the spiritual service, (public worship and the administration of the sacraments,) the chaplain gives lectures to, or holds moral conferences with the prisoners; visits them when sick, administers the consolations of religion to the dying, delivers a sermon to them once a week in the chapel, visits in their cells newly arrived prisoners, and those about to be discharged, admonishes and comforts such as are confined in punishment cells, and often conducts the prison school, or aids the master in doing it.

XX. The Italian government attaches great importance to a service such as that rendered by the chaplains; to such an extent is this true, that, in order to secure it, the government has not hesitated sensibly to increase the budget of the prisons.

XXI. The general direction has kept up the system of volunteer visitation of the prisons in those provinces in which it found that system in existence; and at this moment it makes it the object of a special study whether it would be well to extend the system; if so, in what manner and whether with a connection more or less direct with the central government, or with the local agents either of the prisons or the administration.

In short, it is proposed to solve the problem whether or not the plan of volunteer visitation ought to be considered as a useful or necessary complement of a good prison system.

XXII. Every penal establishment in Italy has elementary schools to which the prisoners, by turns, are admitted three times a week. On the working-days the school continues an hour and a half. On Sunday conferences are held with the prisoners, which sometimes last two hours or two hours and a half, in which a variety of topics, scientific, moral, and miscellaneous, are made the subject of discourse.

XXIII. Prisoners are ordinarily permitted to write and receive letters once a month. The regulations suggest the necessary cautions to prevent the correspondence from becoming a source of danger to the internal security of the establishment, and from being used as a *stimulus* to the illicit passions of the prisoners. Hence these regulations prescribe

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that every letter of a prisoner (unless directed to the minister, to the director general, or to the central inspectors of the prisons) should pass under the inspection of the director, without which the prisoner is not permitted either to send away or to receive a letter.

XXIV. The general opinion of the directors as to the effect of the correspondence of the prisoner with his family is that it is excellent. They are not so unanimous in their opinion as to the effect of the correspondence of the prisoner with persons who are not related to him. The general direction, for itself, is of the opinion that the fruits to be expected from the liberty of correspondence conceded to the prisoner are good or bad, according to the wisdom or tact of the director who grants it. This officer, if he attends assiduously to his duty, ought to know the degree of affection felt toward their families by the prisoners under his care, and how far communications from outside would contribute to render certain prisoners better or worse, and to inspire them with sentiments of submission and obedience, or the reverse.

XXV and XXVI. According to our penitentiary regulations the convict in our prisons, whether for detention or punishment, is not prevented from receiving the visits of a few friends. Various provisions introduced into the regulations of the several penitentiary establishments add the precautions to be observed in the concession of visits, their frequency, and, in fine, the cases of serious sickness in which the visitor is permitted to see the sick prisoner in the interior of the penitentiary.

As regards the exercise of vigilance, it is established that the visits take place always in the presence of a keeper or officer in the male prisons, or of a sister in those for women; besides which, it is positively forbidden to have any communication by signs or conventional expressions, which might tend to defeat the object of the continual presence of the officer.

XXVII. As regards the good or bad results of the visits of relatives or of strangers to the prisoner, the general direction does not think that it can give an opinion different from that already expressed concerning the favorable or unfavorable influence of epistolary correspondence; nor, on the other hand, can we doubt the wisdom of the rule which makes the liberty of receiving visits a premium on good conduct, since it thus serves as a *stimulus* to a constant respect on the part of the prisoner for the discipline of the prison.

XXVIII. The proportion of prisoners who at the time of their entrance are wholly illiterate is as follows: In the ordinary prisons the illiterate constitute 40 per cent. at least; in the bagnios it is 30 per cent.

XXIX, XXX, and XXXI. Schools exist in nearly all the penal establishments of whatever kind.

The prisoners admitted to the benefits of the school in the penal prisons form nearly 70 per cent. of the total population; in the bagnios the proportion is somewhat less. Of those admitted two-thirds are illiterate.

In establishments where the premises are too contracted to permit the organization of a school composed of a considerable number of individuals, the young are accepted in preference to those more advanced in age.

To the foregoing statistical *data* it may be added that, in a number of penitentiary establishments, besides the classes of elementary instruction, we have schools of design, of vocal and instrumental music, and of chemistry as applied to soils in our agricultural penal colonies.

Those prisoners alone are considered deserving of admission to the

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school who, besides the aptness they show for profiting by it, have uniformly conducted themselves well. Attendance on school is not allowed to a prisoner in punishment, and he is always expelled from it when he is guilty of insubordination to the master.

The progress made in their studies by the prisoners forms an element in the annual statistical reports. The subjects taught are the same as those prescribed by the government in the programme of elementary instruction. The schools are under the general care of the school inspectors of the several districts.

Should some particular case seem to make it necessary, instruction may be carried to a greater extent than that specified above; but the director must, in each case, receive a special authorization from the minister.

In the prisons for juveniles attendance upon the school is obligatory, the prison school being divided into four elementary classes, precisely as the communal school is.

Musical instruction in these juvenile prisons receives much attention.

XXXII. Nearly all the prisons of Italy have small libraries, purchased by the minister of the interior, or given by the minister of public instruction, or contributed by philanthropic associations.

The greater part of the works composing these libraries are books written specially for prisoners and others selected from educational works, written in a pleasing style, and presenting clear and elementary notions of the national history, mechanics, moral tales, &c.

XXXIII. As soon as the prisoners acquire the ability to read they show a great inclination to it; but almost invariably they seek in books some diversion from their monotonous life or food for the imagination, rather than a fund of solid knowledge; consequently few of the books read by them are of a didactic character, but the greater part are novels or romances, of course always of an unimpeachable moral tendency.

XXXIV. In prisons recently constructed the systems of drainage are, without exception, those which architectural science has shown to be the best. In old prison buildings, provided they are such as ought to be preserved and will admit the introduction of improved penitentiary systems, new *latrines* and sewers are introduced of the most recent and best construction. In this respect, therefore, the prisons, either recently erected or which have undergone material alterations, are so constructed and arranged that the health of the prisoners is not endangered.

XXXV. In regard to the water supply of our prisons, the general direction has, from the local directors, positive and satisfying assurances both of its sufficiency and its quality.

On an average, there are required for cleaning from 8 to 10 liters *per capita*, not including what is needed for purposes of personal cleanliness and for drinking.

XXXVI. The ventilation of the old prisons is in a more or less satisfactory condition. In the new ones, and those which have undergone or are undergoing extensive repairs, we require an exact observance of all the rules of modern architectural science for the purification of the air, for its renovation, for regulating the heat, &c., to the end that the prisons be free from all exhalations injurious to the health of the prisoners permanently confined in premises which, in cases by no means rare, we could wish were larger.

XXXVII. Cleanliness is made an object of special attention in every prison, and whoever visits our penal establishments, where the arrangements of the buildings are satisfactory, will find their condition, in this

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respect, worthy of commendation, as a sufficient number of hands are detailed for this purpose, and the floors are swept daily, and even, in those parts which require it, two or three times a day.

XXXVIII. Without going into all the minute particulars, we can affirm that the convict, and even the prisoner awaiting trial, (when he does not wear his own clothing,) can, in our Italian prisons, keep himself neat and clean. He has a change of clothing in winter, and in summer he has two changes, of cotton or linen, with the necessary supply of shirts, socks, &c. Every one may satisfy himself of this by examining the list of articles furnished in the detention prisons as well as the penal establishments, which list is published by the general direction of prisons.

XXXIX. Re-affirming what was said above in answer to the thirty-fourth question, we simply add that the water-closets are fixed or movable as the conditions of the building permit; but we always seek to secure in them the quality most desirable, viz, that they be inodorous.

XL. The dormitories and cells are commonly lighted with oil; in some prisons they are lighted with petroleum; in others, more recently constructed, gas has been introduced.

XLI. In the prisons of the northern provinces of Italy heaters are used to soften the rigors of winter, and they are constructed according to the latest improvements of science.

XLII and XLIII. All the new bedsteads are of iron. The old ones are made of sail-cloth, and are suspended in the same manner as a hammock. The bed is composed of a tick filled with straw, corn-husks, or moss; a pillow or bolster, two hempen sheets, and one or two blankets, according to the rigor of the season. In the infirmaries each bed has, besides, a mattress and a linen or cotton counterpane.

XLIV. The regulations prescribe work every day, with the exception of half an hour in the morning for personal cleansing and another half hour in the evening before retiring.

The time of rising varies according to the seasons. In the winter it is at 7; in March and October at 6, and from 1st of April to 3d September at 5. Besides the two half hours above mentioned for rising and retiring, the prisoners enjoy a half hour's rest at each of the two daily meals, besides which they have an hour for walking in suitable yards; and if they attend school, they have an hour and a half for this purpose three times a week. On Sunday both exercise and school are continued for a longer time.

XLV. Every penitentiary has an infirmary, to which the sick prisoner is sent at the request of the medical officer of the establishment, who attends him during his sickness.

XLVI. The diseases most common are those of the digestive and respiratory organs and fevers. The diseases that cause proportionally the greater mortality are those which attack the organs of respiration. The mortality from fevers is less.

XLVII. The number of days passed by the prisoners in the infirmary is in the proportion of 4 to 5 per cent. of the number of days spent in prison by the entire prison population.

XLVIII. The mortality, viewed in relation to the average number of prisoners, is about 7 per cent. of the inmates on the first day of each year, while it is scarcely 5 per cent. of the total population for the whole year.

XLIX. In our penal establishments, unproductive or merely penal labor is unknown.

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L. As penal labor, properly so called, does not exist with us, the general direction would be unable, reasoning from the national character, to express an opinion on the question whether, in Italy, this kind of labor would be deterrent.

LI and LII. For the reason above stated, the general direction is equally unable to express a judgment as to the possible moral and sanitary effects of strictly penal labor.

LIII. In our prisons, the usage varies as regards the mode of managing the prison labor; in some, it is managed by the administration, in others by contractors. For the last three or four years the general direction has sought, and with success, to find contractors for the labor of the prisoners; and already, in many penitentiaries, the labor has been let to contractors, as well as that of a sedentary kind, to wit, that which is done by the prisoners in workshops within the prisons, as that given to agriculture in the open air.

LIV. In respect of financial results, labor let to contractors is undoubtedly to be preferred; no political economist denies that government is, universally, the worst of producers.

As regards the discipline, though the general direction is convinced that the letting of the labor to contractors ought not to produce a bad effect upon the general discipline of a prison, because the director, freed from the numerous cares imposed upon him by the management of the industries, and by the sale of the merchandise, whether at retail or by wholesale, has more time left to devote to the moral improvement of the convicts, and to attend, without other preoccupations, to the internal order and security of the prison; yet about one-third of the directors, interrogated by the ministry of the interior, have shown themselves inclined to continue the system of managing the labor by the administration, or of restoring it, and the remaining two-thirds have approved, and do approve, the contract system recently introduced.

LV. The general direction, before adopting a universal rule, feels the necessity of continuing still further its observations and studies; too little time having, as yet, been given to the trial of the contract system, the experiences gained are neither solid nor regarded as sufficient to decide, absolutely, whether it is expedient to have a general contract for all the industries, or a special contract for each.

LVI and LVII. Very small indeed is the number of those committed to our prisons under the title of idlers, vagrants, or mendicants. Nor is the number great of those who leave our penal establishments without, at least, a rudimentary knowledge of some trade.

LVIII. The general regulations, by prescribing that, at the end of the first period of trial, every prisoner shall be introduced into a workshop to exercise some trade, that he shall not change it except in case of showing himself unfit for it, or the labor proves injurious to him, or he might, through the exercise of it, put in peril the quiet of the workshop or even the safety of the prison, together with the rewards accorded to the prisoner who goes on perfecting himself in his trade and producing a greater amount of good merchandise, are a clear proof how important it is regarded, among us, that the prisoner, on his discharge, be in possession of the power to earn for himself an honorable livelihood.

LIX. The criminal code does not inflict sentences of a short duration upon recidivists. Indeed, it regards as a recidivist even a person guilty of a minor offense, whenever he commits a new transgression. In that case, the relapse always brings upon the delinquent a relatively longer punishment.

LX. In 1871, of convicts sentenced to a punishment of more than a

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year's duration, the number of recidivists was, for the men, 30 per cent.; for the women, 17 per cent.

LXI. Recidivists always receive severer punishments than one who has committed the same offense for the first time and has not, previously, undergone any criminal or correctional sentence.

LXII. In the detention prisons of some size, there are commonly sections destined to the imprisonment of civil debtors. In none of them is there wanting at least an apartment for whomever is imprisoned on the demand of his creditor.

In Italy, however, the number of those imprisoned for debt is exceedingly small. The maintenance of the debtors is a charge upon the creditors, and therefore his treatment differs from that of other prisoners maintained at the charge of the state.

LXIII. The cause of crimes of blood was, in 1871, the sentiment of revenge; of crimes against property, cupidity.

LXIV. Women form only 3 per cent. of the entire prison population in Italy.

LXV. When once a convict has been assigned to the prison in which he is to undergo his punishment, the discipline to which he is subjected looks not only to his safe-keeping, but also to his reformation.

LXVI. The general direction of prisons can only repeat, in reply to the present question, what it has already said in answer to the fourth question, to which, therefore, it begs to make reference.

LXVII and LXVIII. Certain religious associations possess funds that may be used in aid of liberated prisoners; an occasional patronage society exists in some of the cities of Italy. Such societies are what remains of institutions more or less ancient, but prior to 1859, which were religiously preserved and even protected by the Italian government; but there are none of any great importance, except at Milan, Turin, and Florence. The government has sought to extend institutions of this kind; but down to the present time, such institutions are too few in number and too limited in means to enable us to predict whether they will take root in our social soil, or, if so, whether their rules should be preserved or modified in order that the best fruit for which they were founded may be obtained from them.

LXIX. We refer for all answer to the present question to the statements made and the conclusions drawn in replying to the fourth question.

VI.—GREAT BRITAIN.

1. The convict prisons of England.

1. What is the number of government convict prisons in England, distinguishing between those designed for the different sexes?

Eleven; eight exclusively for males, one mixed, and two exclusively for females.

2. What is the aggregate capacity of the convict prisons, (*a*,) the males, (*b*,) for the females?

Males, 8,764; females, 1,239; exclusive of infirmary cells, punishment cells, &c.

3. How many of these prisons are wholly upon the separate system?

Two, and parts of two others, but separate sleeping cells are general, except for invalids of certain classes, and some of the women.

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4. In how many is there provision, after the first period of imprisonment, for other stages of discipline, including associated labor?

All but two of the above are prisons in which convicts are employed in associated labor.

5. How, in each class of prisons, is separation carried out, as regards work, exercise, (other than work,) attendance in chapel, and sleep?

By the construction of the prisons in some respects, and internal regulations in regard to others.

6. How many convict prisoners are placed (under contract with the local authorities) in prisons not belonging to the government?

None.

7. What is the aggregate number of cells?

Nine thousand and fifty-seven cells, exclusive of infirmary cells and punishment cells. This number is being added to considerably.

8. What are their ordinary dimensions?

In the model prison, at Pentonville, they are 13 feet by 7 feet by 9 feet, but in others they vary.

9. What furniture do they generally contain?

Blankets and bedding; washing utensils, &c.; eating utensils; table and stool; slate and books.

10. What are the rules, framed according to law, in regard to the certification of the cells, and their visitation by officers; and in respect to the visits to the prisons by the inspectors of prisons?

Their fitness for their purpose is certified by the surveyor general of prisons. They are visited by the directors of convict prisons, but not by the inspectors of prisons.

11. How far are these rules carried into effect?

Completely.

12. What has been the average number of prisoners in the convict prisons in the last five years?

Sixty-seven hundred and thirty-three males, and 1,100 females.

13. What are the chief internal regulations of these prisons?

See books of rules.

14. How are the officers appointed, and what is their tenure of office?

By the secretary of state for the home department, on the recommendation of the directors. Tenure of office so long as they are efficient and are wanted.

15. What qualifications are required, and in what manner are they tested?

Examination by civil-service commissioners; former character and experience, and actual probation.

16. What provision is made for superannuated and disabled officers?

By act of Parliament regulating civil-service pensions.

17. Are rewards employed to stimulate the prisoners to good conduct and industry? If so, of what kinds, and to what extent?

Yes. The mark system.

18. Is there a system of progressive classification? If so, how is it worked, and with what results?

Yes; (see rules for classification.) The results are considered satisfactory.

19. What punishments are used for breaches of prison rules or other misconduct?

Loss of marks, degradation of class, close confinement, reduction of diet, and corporal punishment.

20. Is corporal punishment ever employed?

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Yes.

21. Is a full record of punishments kept?

Yes.

22. What kinds of offenses are most common?

It is difficult to say. They vary in different prisons.

23. In what convict prison last year was the number of punishments least, and what was it?

Millbank, (males,) Fulham, (females.)

24. To what circumstances is this comparative exemption from punishment attributable?

No accurate statement can be made on this point.

25. Are prisoners always allowed to make complaints of grievances, real or fancied? If so, to whom; and what attention is paid to their complaints? And what security is there that the complaints shall be properly examined?

Yes; to the foremen, and, if necessary, to the directors, or by petition to the secretary of state. They are always investigated.

26. How far are moral forces used in the discipline of the convict prisons; and what is found to be the comparative efficacy of moral and coercive agencies?

Moral forces are employed in preference to others, but the effect depends upon the individual prisoners.

27. Do the inmates of the convict prisons wear a party-colored dress?

Yes, in certain cases.

28. Is your own opinion for or against such a prison dress; and, in either case, upon what grounds?

For it, in those cases.

29. Is the mask worn in convict prisons? What is your judgment of its utility or the reverse?

No; I do not think it is of any use.

30. To what extent are chaplains employed, and of what denominations are they?

Church of England and Roman Catholic are employed in all convict prisons.

31. What religious services are held on Sunday, and during the week?

Two services on Sundays and daily morning prayers.

32. Are religious tracts and papers distributed to the convicts?

Books of this kind are supplied by government, and furnished to prisoners at the discretion of the chaplain.

33. Are volunteer working visitors, of either or both sexes, admitted into the prisons? If so, under what restrictions, and with what results?

Not generally.

34. In what spirit do the prisoners receive efforts for their moral and religious improvement?

See the chaplain's reports.

35. What are the regulations relating to the correspondence of prisoners?

Periodical letters to respectable acquaintances are allowed; the frequency varies according to the class.

36. What, in relation to visits from friends?

The same as the above.

37. Are the letters and visits of friends found to be beneficial to the prisoners or otherwise?

They are found to be beneficial.

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38. What proportion of prisoners are found, on their admission, either wholly illiterate or so imperfect in their knowledge of reading as to derive neither instruction nor entertainment from it?

See the directors' annual reports.

39. What provision is made for the schooling of prisoners?

A staff of schoolmasters is provided, and schooling takes place after working hours.

40. What branches are taught, and what progress is made therein?

Elementary education, and the progress is considered satisfactory.

41. Is there a library in each convict prison, including secular as well as religious books?

Yes.

42. What, about, is the average number of volumes?

About three or four volumes to each prisoner.

43. Do many of the prisoners show a fondness for reading?

Yes.

44. What time have they for reading?

Generally after work.

45. What, in a general way, are the sanitary arrangements and condition of the prisons?

Good. No epidemic or other diseases prevail in these prisons. They are generally in a high state of cleanliness, and the medical officers are required to examine and report frequently on these points.

46. What are the prevailing diseases?

See medical officers' annual reports.

47. What has been the average annual death-rate for the last five years?

Per 1,000—males, 13.7; females, 14.5.

48. In what prison last year was the rate of mortality smallest, and what was that rate?

The prisons must all be considered as one; no trustworthy inference can be drawn from considering them separately.

49. To what circumstances is this small rate attributable?

No answer.

50. Is there a distinction made in the convict prisons between penal and industrial labor? If so, what kinds of each are in use?

Convicts are all employed on industrial labor, unless oakum-picking, in which a few are employed, is considered penal labor.

51. Is the deterrent effect of penal labor found to be considerable? What is found to be its effect upon the health of the prisoners? What its moral influence?

No answer.

52. Is penal labor utilized in the convict prisons? If so, what is its average daily value in money *per capita?*

Crank, tread-wheel, &c., are not used for convicts.

53. Upon what principle is the industrial labor of the convict prisons organized? On a contract system or some other?

Not on the contract system. All work is performed directly under officers.

54. What have been the average annual net earnings per head of the prisoners in the last five years, exclusive of any portion allowed to the prisoner himself?

Annual earning per head, (last two years,) £22 18*s.* 1¾*d.* on the average number of prisoners.

55. In what prison, last year, were the net earnings the highest per head; and what was the amount?

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Chatham and Portsmouth; annual earning from £38 16*s*. to £38 18*s*. on average number of prisoners.

56. What is the average number of prisoners there?

Chatham, 1,586; Portsmouth, 1,219.

57. What are the chief kinds of work there?

Engineering works, brick-making, &c.

58. To what circumstances are the comparatively high earnings attributable?

Suitability of the work.

59. Is a prisoner allowed any portion of his earnings? If so, how is that portion determined?

No.

60. Is overwork encouraged by the prisoner being allowed all the earnings so obtained?

No.

61. Do the prisoners work by the hour, or are tasks and piecework employed as far as practicable?

Generally by the hour. Tasks encouraged when practicable.

62. How many hours each day, as measured either in time or by piecework, do the prisoners generally labor?

About eleven hours in summer and nine in winter.

63. What, during the last five years, has been the average annual cost of each prisoner, including food, clothing, and a proportionate share of salaries, and of the estimated rent, (say at the rate of 5 per cent. on the cost of the building,) and of every other expense whatever, but deducting the money received for prisoners' work, (if sold to the public,) or its value, if employed on public works belonging to the government, and unconnected with the prison?

For the last two years the net annual cost per prisoner each year has been £12 10*s*. 10*d*., cost of buildings not considered.

64. How much of this cost is put down for rent?

None.

65. What proportion of the prisoners had not learned a trade or calling prior to their committal?

There is no complete information. See returns in directors' annual report.

66. Is it made an object to impart to them the art of self-help; that is, the power to earn an honest living on their discharge; if so, in what manner, and with what results?

Yes; by employing them at suitable trades, &c.

67. What has been the average length of sentences for the last five years?

About seven years.

68. What has been the proportion of life sentences for the last five years?

See criminal returns.

69. Do prisoners for life receive the same treatment as other prisoners?

Yes; in every respect.

70. What portion of the prisoners committed in each of the last five years had been in a convict prison before?

No regular returns. Return in directors' report for 1869, page 5, gives the necessary information at a certain period, (April, 1869.)

71. What portion had been previously committed to any prison?

No answer.

72. From what *data* have the recommittals been ascertained?

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From actual records of men still in prison.

73. What proportion of the prisoners were minors when committed?

See return of ages in annual report of directors.

74. Is deterrence or reformation made the primary object?

Both.

75. Are the prisoners able, by industry and good conduct, to shorten their periods of confinement; if so, to what extent?

Yes; one-fourth of the time on public works.

76. What do you think of the policy of substituting unlimited for limited periods of imprisonment, to which criminals are sentenced, so as to make the time of liberation depend on the prisoner's moral condition, and the reasonable expectation of his not relapsing into crime?

Prefer limited periods.

77. Under present circumstances, are prisoners often set free before their liberation can be considered safe to society, or really beneficial to themselves; whether because their moral cure cannot be deemed complete, or because they have not the means of getting an honest livelihood, either for want of a sufficient knowledge of some handicraft, or from physical or mental weakness?

Probably they are.

78. On the other hand, are prisoners often detained beyond the time when it is fully believed that they can safely be liberated?

It is impossible to say.

79. Is the "intermediate system" for gradually preparing prisoners for liberation in use; if so, to what extent and with what results?

The whole system is designed gradually to prepare prisoners for liberation.

80. Do the mass of prisoners, as a matter of fact, leave the prisons better or worse, morally, than they entered them?

Better, it is believed. See the chaplains' reports.

81. Are female prisoners, needing such instructions, taught to cook and to sew; and, generally, are efforts made to enable a man or woman, on liberation, to avoid a wasteful expenditure, and to turn their wages to the best account?

Taught to work; cooking not specially taught in domestic economy.

82. Is any attempt made to give the prisoners good tastes, such as that for music, so as to diminish the danger of their falling, when liberated, into habits of drunkenness, or other debasing pleasures?

So far as church services go.

83. Is any effort made to induce the prisoners, from their share of their earnings, to help to support their families, or to make restitution to those whom they have robbed or otherwise injured?

They devote their labor to the benefit of society, whom they have injured, and whom they put to heavy expense.

84. If not, is there any other way in which they can practically give that evidence of moral improvement which is afforded by a willingness to forego selfish advantages for the benefit of others?

No. They have only bare necessaries, and, therefore, cannot forego any advantages.

85. Are efforts made to keep up the domestic ties of prisoners, such as allowing them to see members of their family, from time to time, except when, under the circumstances, these ties must be hurtful?

Yes.

86. What agencies are employed to provide discharged prisoners with work, in order to prevent their relapse; and with what results?

Discharged prisoners' aid societies.

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87. Are any other efforts made through prisoners' aid societies, refuges, or otherwise, to encourage discharged prisoners, desirous of doing well, and to prevent their relapse?

Yes.

88. What means are taken to trace prisoners after their discharge, in order to ascertain what is their subsequent career?

Registration of criminals.

89. General and miscellaneous remarks.

A view of the English convict system, which embraces the prisons in England only, is in a great degree imperfect, because transportation has been such an integral part of the system, and though no convicts have been sent to Australia for some years, the system has had the effect of withdrawing many of the prisoners who were most likely to reform and have reformed, and left those who were more likely to be again convicted.

ERON CARU CAPLER,
Chairman of Directors, and Surveyor General of Prisons.

2. Borough and county jails in England.

1. What is the whole number of borough jails in England?

Thirty-five.

2. What of county jails?

Eighty-seven.

3. What, if any, is the exact distinction between these two classes of prisons; and what the specific functions of each?

None, except that the county prisons are governed by the county magistrates, and the borough prisons by the borough magistrates.

4. What is the aggregate number of prisoners which the two classes of jails are together calculated to receive?

Twenty-seven thousand one hundred and sixty-nine.

5. What, about, is the average period of confinement?

Somewhat under one month.

6. About what portion of the prisoners are confined for periods not exceeding one month?

About three-fourths.

7. About what portion for periods of from one month to six months?

About one-fourth.

8. About what portion for periods exceeding six months?

Less than one per thousand.

9. Is there a separation of the prisoners—complete or partial—in any of the prisons, by day as well as by night?

As a rule, all prisoners are separated by night, where there is sufficient cell accommodation. Prisoners in many prisons work to a certain extent in association, but under such supervision as the governors consider sufficient to prevent communication.

10. What, in general, are the dimensions of the cells; distinguishing cells used during the night only from those used both by day and night?

The cells in the several prisons vary from about 400 to 1,000 cubic feet. As a rule the smaller cells are used for sleeping-cells only, or are certified for very limited periods.

11. What is their ordinary furniture?

Bedstead or removable hammock, table, and stool, washing apparatus, and chamber-pot, the last utensil being omitted in cases where the cells contain a water-closet.

12. What are the rules, framed according to law, in regard to the

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certifications of the cells used both by day and night, and their visitation by officers; and in respect to the visits to the jails by the inspectors of prisons?

Vide clause 18, prisons act, 1865, as to certificates of cells. The visitation of officers is regulated by the rules of the several prisons, and inspectors are required to visit each prison at least once a year.

13. How far are these rules carried into effect?

Complied with in all respects.

14. Do the prisoners work in the cells or in association?

Both in cells and association, according to the capabilities of the prison and the character of the work required.

15. Is the mask worn in any of the prisons?

In very few.

16. Has it been discontinued in any where it was formerly worn; if so, with what effect?

Not since the present inspectors assumed office.

17. What is your own judgment as to its utility or the reverse?

We think but slightly of its utility.

18. What has been the aggregate average number of prisoners confined in the borough and county prisons, jointly, for the last five years?

We have no records by which to furnish the necessary reply to this query as to a five years' aggregate average.

19. Are the internal rules and regulations of all these prisons the same; if not all the same, do they differ materially?

The rules of all prisons are founded on the prisons act, 1865, by the respective county and borough visiting justices, and they do not differ materially.

20. Can you supply copies of some of the best?

Copies of rules of three prisons are herewith forwarded.

21. How are the officers appointed; and what is their tenure of office?

Officers are appointed by the visiting justices, and are retained at their pleasure.

22. What provision, if any, is made for superannuated and disabled officers?

Vide clause 15, part 1, prisons act, 1865.

23. Are rewards employed to stimulate the prisoners to good conduct and industry; if so, of what kinds, and to what extent?

Gratuities may be given under clause 42, same act.

24. Is there a system of progressive classification; if so, how is it worked, and with what results?

This system obtains in some few prisons, and is considered to work well.

25. What punishments are in use for breaches of prison rules and other misconduct?

Vide clauses 50 to 60, schedule 1, prisons act, 1865.

26. Is corporal punishment ever employed for criminal offenses?

Yes.

27. Is a full record of punishments kept in every prison?

Yes.

28. What kinds of offenses are most common?

Idleness and insolence.

29. In what large prison last year, and in what small one, were the numbers of punishments least; and what were they?

Durham County prison, and Lincoln County prison. In the former the punishments for prison offenses, as follows:

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	Males.	Females.
Whipping	2	..
Solitary, or dark cells	29	18
Stoppage of diet	27	2
	58	20

In the latter, solitary, or dark cells, 2 males.

30. To what circumstances are these comparative exemptions from punishment attributable?

So many different causes may contribute to this result in different prisons, that it would be invidious to give a categorical reply.

31. Are prisoners always allowed to make complaints; if so, to whom, and what security is there that the complaints shall be properly examined?

Yes; to inspectors of prisons, visiting justices and governor; on the supposition that these gentlemen do their duty, all complaints receive attention.

32. How far are moral forces used in the discipline of the prisons, and with what effect? What is found to be the comparative efficacy of moral and coercive agencies?

We believe that the chaplains are, as a rule, very assiduous in their endeavors to improve the minds and character of the prisoners, and that the governors adopt the same course, and in our opinion with good effect. The comparative efficacy of moral and coercive agencies depends so much on the individual temperament of prisoners that no conclusive reply can be given.

33. Do the prisoners wear a party-colored dress? What is your judgment as to the necessity or utility of such a garb?

Vide clause 23, schedule 1, prisons act, 1865. This dress is not necessarily party-colored, though in many instances it is so. In our opinion, a distinctive dress is all that is required.

34. To what extent are the prisons provided with chaplains?

Clause 10, part 1, prisons act, 1865, is complied with.

35. What religious services are held on a Sunday, and during the week?

[This question was passed by the inspectors without answer, no doubt from inadvertence.]

36. Is there a Sunday-school in any of the prisons?

We are not aware.

37. Are religious tracts and papers distributed to the prisoners?

Yes; at the discretion of the chaplain.

38. Are volunteer working visitors, of either or both sexes, admitted within the prisons; if so, under what restrictions, and with what results?

Not that we are aware.

39. In what spirit are the efforts made for the moral and religious improvement of the prisoners received by them?

As a rule, the efforts of the chaplain are received in a becoming manner.

40. What are the regulations relating to the correspondence of prisoners?

Prisoners, as a rule, are permitted to write and receive a letter (subject to the inspection of the governor) after the conclusion of the first

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three months, and once during each subsequent three months of detention. In special cases the governor has power to relax this rule.

41. What, in relation to the visits of friends?

The same rules as above generally apply to the visits of friends.

42. Are the letters and visits of friends found to be beneficial or otherwise?

In our opinion they are generally beneficial.

43. What proportion of the prisoners are found, on admission, either unable to read, or to read so imperfectly as to derive neither instruction nor entertainment?

Out of the total committals for the year ending September, 1870, viz, 157,223, 53,265 prisoners could neither read nor write, and 98,482 could read, or read and write imperfectly.

44. What are the provisions relating to the schooling of prisoners? What branches are taught, and what progress is made therein.

Vide clause 53, schedule 1, prisons act, 1865, the provisions of which are carried out.

45. Is there a library in each prison, including secular as well as religious books?

Yes.

45 *bis*. Do the prisoners show a fondness for reading?

Generally.

46. What time do they have for reading?

The usual time is during the dinner-hour, and after the conclusion of their daily labor till bed-time.

47. What, in a general way, are the sanitary arrangements and condition of the prisons?

Satisfactory.

48. What are the prevailing diseases?

If one class prevail, it is probably chest affections, a great proportion of the more severe of which cases might be traced to predisposition previous to admission.

49. What has been the average death-rate for the last five years?

Same answer as last.

50. In what large prison and in what small prison was the rate of mortality smallest, and what, in each instance, was that rate?

We have no *data*.

51. To what circumstances are these small rates attributable?

Same answer as last.

52. Is a distinction made in any or all of the prisons between penal and industrial labor? If so, what kinds of each are in use?

Yes. Clause 19, part 1, prisons act, 1865, which is carried out in all prisons, determines the character of penal labor. Industrial labor consists of various kinds of weaving, mat-making both by hand and loom, oakum-picking, teasing hair and cocoa-fiber, and the various trades, viz.: tailoring, shoemaking, carpentering, gardening, blacksmith work, &c.

53. Is the deterrent effect of penal labor found to be considerable, as shown by the fewness of recommittals? What is found to be its effect upon the health of the prisoners? What its moral influence?

We believe that it is so; but to what extent it tends to the "fewness of recommittals" we are unable to state, as all prisoners sentenced to hard labor are, as a rule, (in compliance with clause 34, schedule 1, prisons act, 1865,) placed at hard labor for the first three months at least after conviction, and for the whole of their sentence if not exceeding three months. As a general rule, the health of the prisoners

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does not suffer by this form of labor. In individual instances where it does, the surgeon of the jail has full power to alter the character of the prisoner's punishment. As to its moral influence, we believe, as stated above, that it has a deterrent effect.

54. Is penal labor utilized in the prisons? If so, what is its average daily value in money, *per capita*?

Penal labor (or hard labor of the first class) is in many prisons turned to account, but is not as remunerative as hard labor, (second class or industrial labor.) We have no means of giving the daily average value per head.

55. Upon what principle is the industrial labor of the prisons organized.

Task-work is required in some instances, in others so many hours' labor *per diem*.

56. What have been the average annual net earnings, per head, of the prisoners in the last five years, exclusive of any portion allowed to the prisoner himself?

We have no *data*.

57. In what large prison last year, and in what small prison, were the net earnings the highest per head, and what were the amounts?

Wakefield County prison, £6 13*s*. 9¾*d*.; Grantham Borough prison, £5 2*s*. 9*d*.

58. What is the average number of prisoners in each of these prisons?

In Wakefield, 1,290 was the daily average for the year 1870; and in Grantham, 9.

59. What are the chief kinds of work in each?

In Wakefield, rope and oakum beating, hand-weaving with heavy looms, stone-breaking, tread-wheel, the power of which is applied to industrial purposes; mat-making, to which steam-power is applied to a great extent; industrial trades, &c. In Grantham, stone-breaking, wood-cutting, and mat-making, &c.

60. To what circumstances, in each case, are the comparatively high earnings attributable?

In Wakefield to the employment of steam-machinery principally; and in Grantham to a ready and profitable market for the sale of prison produce.

61. Is a prisoner allowed any portion of his earnings? If so, how is that portion determined?

As a rule prisoners are not allowed a portion of their earnings, but well-conducted prisoners who have served any length of time generally receive a small gratuity on discharge.

62. Is overwork encouraged by the prisoner being allowed all the earnings so obtained?

Such is not the rule.

63. Do the prisoners work by the hour, or are tasks and piecework employed as far as practicable?

Both plans are in use.

64. How many hours each day, as measured either in time or by piecework, do the prisoners generally labor?

Not more than ten hours, nor less than six, in accordance with clause 34, prisons act.

65. What, during the same time, has been the average annual cost of each prisoner, including food, clothing, and a proportionate share of salaries, and of every other expense, except rent; but deducting the money received for prisoners' work (if sold to the public) or its value, if done for government?

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The average annual cost of each prisoner varies very considerably in the several prisons, ranging from £10 7*s.* 3*d.* in the county prison, Montgomery, to £128 14*s.* 4*d.* in the county prison at Oakham.

66. What proportion of the prisoners had not learned a trade or calling prior to their committal?

Out of 157,223 prisoners committed during the year 1870, 20,219 had no occupation.

67. It is made an object to impart to them the art of self-help; that is, the power to earn an honest living on their discharge? If so, in what manner, and with what results?

Prisoners sentenced for any lengthened period have generally facilities for learning some trade or occupation.

68. What has been the general length of sentences for the last five years?

We have no means of stating.

69. Are repeated short sentences for minor offenses found to be of much use; if not, what remedy would you suggest?

We are of opinion that repeated short sentences for minor offenses are not of much use, and that the length of sentence should, as a rule, be increased on every successive conviction.

70. What do you think of the policy of substituting unlimited for limited periods of imprisonment, to which criminals are sentenced, so as to make the time of liberation depend on the prisoner's moral condition and on the reasonable expectation of his not relapsing into crime?

We believe that the difficulties attending such a policy would be insuperable.

71. Under present circumstances are prisoners often set free before their liberation can be considered safe to society or really beneficial to themselves; whether because their moral cure cannot be deemed complete, or because they have not the means of getting an honest livelihood, either from want of a sufficient knowledge of some handicraft or from physical or mental weakness?

Prisoners must be released according to the existing law at the termination of their respective sentences.

72. On the other hand, are prisoners often detained beyond the time when it is fully believed that they could safely be liberated?

Same answer as last.

73. Are any of the prisoners confined for debt; if so, is the number large?

Yes; but only under the provisions of the act for the abolition of imprisonment for debt. (32 and 33 Vict., chap. 62.) The numbers so committed are small.

74. What is the longest term for which they are held?

The length of sentences is regulated by the above act.

75. Are they treated like other prisoners or differently?

Generally differently.

76. What has been the average proportion of recommittals for the last five years, and upon what *data* have they been ascertained?

We have no means of stating.

77. Are sentences increased on reconviction?

Not necessarily so.

78. About what proportion of the inmates owe their committal, it is believed, directly or indirectly, to drink?

We have no *data*.

79. What proportion were minors when committed?

Same answer as last.

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80. What proportion were orphans by the loss of one or both parents?
Same as last.

81. What is the average proportion of the sexes?
In the year 1870 were admitted 116,240 males and 40,983 females.

82. Is deterrence or reformation generally made the primary object?
In the shorter sentences, deterrence; in the longer sentences, both systems are combined.

83. Is the "intermediate system" for gradually preparing prisoners for liberation in use; if so, to what extent and with what results?
The "intermediate system," as in use in certain Irish government prisons, is not adopted in either county or borough prisons in this country.

84. Do the mass of the prisoners, as a matter of fact, leave the prisons better or worse morally than they entered them?
We believe that, as a rule, prison discipline is beneficial.

85. Are female prisoners, needing such instruction, taught to cook and to sew; and generally are efforts made to enable a man or woman, on liberation, to avoid a wasteful expenditure, and to turn their wages to the best account?
When the length of sentence admits, female prisoners are generally taught cooking, washing, and sewing.

86. Is any attempt made to give the prisoners good tastes, such as that for music, so as to diminish the danger of their falling, when liberated, into habits of drunkenness or other debasing pleasures?
Not aware of any prison in which music is taught except for devotional purposes.

87. Is any effort made to induce the prisoners, from their share of their earnings, to help to support their families or to make restitution to those whom they have robbed or otherwise injured?
Not that we are aware.

88. If not, is there any other way in which they can practically give that evidence of moral improvement which is afforded by a willingness to forego selfish advantages for the benefit of others?
By willing industry and cheerful obedience to the rules of the prison and the orders of their officers.

89. Are efforts made to keep up the domestic ties of prisoners, such as allowing them to see members of their family, from time to time, except when, under the circumstances, these ties must be hurtful?
Yes.

90. What agencies are employed to provide discharged prisoners with work, in order to prevent their relapse, and with what results?
Prisoners' aid societies, reformatories, training ships for boys, &c., of all of which we believe the visiting justices to avail themselves as far as practicable.

91. Are any other efforts made, by means of the visits of officers or through prisoners' aid societies, refuges, or otherwise, to encourage discharged prisoners desirous of doing well, and to prevent their relapse?
Yes.

92. What means are taken to trace prisoners after their discharge in order to ascertain what is their subsequent career?
To enable the police to carry out such duties, descriptive returns and photographs are forwarded to Scotland Yard.

HENRY BRISCOE,
T. FOLLIOTT POWELL,
Inspectors of Prisons.

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3. Reformatories of Great Britain.

1. What is the number of reformatories in Great Britain?

December 31, 1871, 65.

2. What quantity of land is generally attached to each reformatory?

No fixed amount; quantity varies from 1 to 400 acres.

3. What is the aggregate amount of land belonging to or rented by them?

About 4,000 acres.

4. How are the funds provided for their support?

Allowance from treasury, 6*s.* per week per head, contributions from county or borough rates, industrial profits, and voluntary subscriptions.

5. Is the principle of the responsibility of parents for the full or partial support of their children, while inmates of the institution, recognized and enforced? If so, what is the average annual sum per inmate received from this source?

Parents are chargeable, under the reform-school act, up to 5*s.* per week for each child. The majority are too poor to contribute. Payments, when practicable, average 1*s.* 6*d.* per week. Rate of assessment, 1*d.* in 1*s.* of wages.

6. What is the total average sum?

About £4,000 per annum.

7. What is found to be the effect of the practical application of this principle?

It is a check on the parents' neglect of their children, and counteracts the attraction which the advantages of the reformatory might possibly present.

8. What are the ordinary kinds of work in the reformatories?

Farm-work and gardening, tailoring, shoemaking, turning, carpentry, wood-chopping, and, in some, weaving or printing. For girls, laundry, house, and needle work.

9. What, about, has been the net average annual value per inmate, of the work; distinguishing that of work employed on articles sold to the public from that of work done for the reformatory?

Such a distinction is impracticable; the same workshops, boys, and teachers being employed for both sorts of work.

The average industrial profits will be about £2 per head per annum, (not quite 1*s.* per week.)

10. In what large reformatory, last year, and in what small one, were the net earnings the highest per head; and what were the amounts?

Of large reformatories. 1870: Highest, Red Hill, £1,529 profit; lowest, North Lancashire, £237. Number of inmates: Red Hill, 300; North Lancashire, 100.

The amount of industrial profit has nothing to do with the size of the school. Many small schools make a larger return than some of the large ones, from having better opportunities for the employment of their inmates in the neighborhood of the school.

Profits depend on the locality of the school, the demand for labor, the quality of the soil, the capital sunk in drainage and improvements, the market for the articles manufactured, &c.

11. What is the average number of inmates in each of these two reformatories?

12. To what circumstances, in each case, are the comparatively high earnings attributable?

See answers to previous question.

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13. What has been the average annual cost of each inmate, including food, clothing, and a proportionate share of salaries, of the estimated rent, and of every other expense whatever; deducting the money received for work, but not the payment by the parents?

Boys—England, 1870: £18 17*s.* 9*d.*; Scotland, £17 1*s.* 3*d.* Girls—England £17 17*s.* 10*d.*; Scotland, £13 13*s.* 6*d.*

14. What has been the total average annual cost, so reckoned, of all the inmates?

1870. £108,035 6*s.*

15. Is the family or congregate system in use?

Most of the schools are on the associated system. Red Hill, North-eastern, Calder Farm are on the family or distribution plan.

16. For what kind of offenses are the children usually committed?

Mostly for theft; in some cases for arson and homicide.

17. What is the process of committal?

Mostly summary conviction before two magistrates; also sentence by courts of assize or quarter sessions.

18. What are the usual periods of sentence?

The act prescribes a minimum of two years and a maximum of five years. The average period about three and a half or four years.

19. Must the full term be served out, or may the children be discharged, as reformed, prior to the expiration of their sentence?

The inmates of a reform school can be placed out on probation, under a license, after eighteen months' detention.

20. If they can be so discharged, with whom is this power lodged?

They can be discharged at any time by the secretary of state for the home department.

21. Are the children, who have been discharged as reformed, considered still, to some extent, under the care of the institution, so that they can be returned to it if not doing well, or is their discharge unconditional?

While on license they can be recalled to the school at any time, if they misconduct themselves, or the situation they have been placed in proves to be unsuitable. When once discharged they are free from any further control.

22. Within what ages are children admissible?

Maximum age, 16; minimum, 10, except for children who have been before convicted, or who are tried before courts of assize or quarter session.

23. Are both sexes received into the same institution?

No; boys' reformatories and girls' reformatories are entirely distinct.

24. In what ways are the children disposed of on their discharge?

Emigration, (mostly to Canada;) enlistment in the army; merchant service at sea. The majority to trades or farm, or domestic service.

25. How is the time divided in regard to labor, schooling, sleep, and recreation?

School and work about ten hours daily; sleep, meals, washing, prayers, and recreation about fourteen.

26. Is the discipline most like that of a prison or of a family school?

Everything prison-like is entirely avoided. There are no wardens, and, in most cases, no walls.

27. Do the inmates sleep in common dormitories or in separate apartments? If in common dormitories, what supervision is had over them?

In common dormitories, usually holding from ten to twenty-five, (some are larger.) One of the assistant teachers sleeps in an adjoining room, or in a cubicle parted from the dormitory. The master usually has

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supervision of one or two of the rooms from his own room by a window.

28. What proportion of the children are found wholly illiterate on committal?

Probably about one-third, but we have no exact return.

29. What branches of learning are taught; and how far are the children carried therein?

Reading, writing, ciphering, In some cases drawing and geography; school-ships, a little navigation.

30. Has each reformatory a library, including secular as well as religious books? If so, do the children make much use of the books? What time do they have for reading?

Most reformatories have a lending library of both sorts of books. They are generally much used on Sundays and on winter evenings.

31. Has each institution a chaplain? If so, what are his duties, and how much of his time is devoted to them?

Of the Protestant schools, three, Red Hill, Castle Howard, and Woodbury Hill, are superintended by a clergyman. A few others have a chaplain attached, who visits, instructs, &c., once or more in the week. All Catholic schools have a chaplain to visit, receive confessions, &c.

32. If there be no chaplain, how is his place supplied?

The superintendent, or schoolmaster, or both, give religious instruction.

33. What rewards are employed as a *stimulus* to good conduct?

Privileges of food or liberty; distinctions of dress, money, or other prizes.

34. Is the principle of progressive classification in use? If so, how is it worked, and with what effect?

The boys (or girls) rise from class to class by proficiency and merit.

35. What disciplinary punishments are employed?

For small offenses, fines and loss of privileges, or partial deprivations of food; for serious ones, confinement in a cell or corporal punishment.

36. In what large reformatory, last year, and in what small one, were the numbers of punishments least; and what were they?

[No answer.]

37. To what circumstances are these comparative exemptions from punishment, in each instance, attributable?

[No answer.]

38. Are the antecedents of the inmates made matter of record?

Yes.

39. How far is their history, while connected with the institution, recorded?

A monthly or quarterly report is usually drawn up and entered in the "register," or each fault is noted in this on the date of its occurrence.

40. To what extent, and in what ways, are a knowledge of, interest in, and care over them, kept up after their discharge; and with what results?

The managers of each school are required to report for three successive years, after each inmate's discharge, on his (or her) character and circumstances. A yearly return is obtained also from each prison of any offender in jail during the year who is recognized as having been in a reformatory. By this the managers' reports are checked.

41. What proportion of the children are orphans by the loss of one or both parents?

Of the 1,612 admitted in 1870, 591 were orphans.

42. What proportions are otherwise outside of the normal family re-

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lation, by reason of having vagrant, vicious, or criminal parents, or from any other circumstances?

[No answer.]

43. What in general is the sanitary state of each reformatory as regards food, drainage, ventilation, water supply, hospital accommodation, means and enforcement of personal cleanliness, &c., &c.?

Good.

44. What are the prevalent diseases, and what the average death-rate?

Disease is scarcely known. There are a few cases of consumption, and some of scrofula. The average death-rate is under 5 per thousand, (or one-half per cent.)

45. In what large reformatory, and in what small one, were the rates of mortality smallest; and what were they?

[No answer.]

46. To what circumstances are these small rates attributable?

[No answer.]

47. What are the regulations regarding the correspondence of the inmates and the visits of friends; and what influence are these found to exert upon them?

Letters are allowed once in two or three months. Visits usually once a month, or two months. The influence is good, natural affections being kept up.

48. What is the average period of continuance in the reformatories?

About three or three and a half years.

49. Is there any special arrangement for training officers for reformatories?

There is no training institution. But the treasury allows for the training of a man £40, and of a woman £27, for twelve months, if received into a good reformatory. Very few are trained.

50. What proportion of the inmates are believed, on their liberation, to be reformed; and upon what *data* is this belief grounded?

About 75 per cent., average. In some schools from 85 to 95 per cent. In some under 55 per cent. The *data* are furnished by the returns and reports. See question 40.

51. General and miscellaneous remarks.

The reform-schools act, the rules and regulations, and the printed report of the inspectors for 1870, will supply the above particulars and much extra information in matters of detail.

Rev. SYDNEY TURNER,

Her Majesty's Inspector of Reform-Schools, 15 Parliament Street.

4. Industrial Schools in Great Britain.

1. What is the number of industrial schools in Great Britain?

December 31, 1871, ninety-two.

2. What quantity of land is generally attached to each reformatory?

Most industrial schools are in towns, and have no land attached. Some few are in the country, and have a garden or a few acres of farm land.

3. What is the aggregate amount of land belonging to them?

Probably about 100 acres.

4. How are the funds provided for their support?

Treasury allowances, English schools, 5*s.* per week; Scotch schools, 4*s.* 6*d.* per week. Voluntary subscriptions. Payments from county or school rates; industrial earnings.

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5. Is the principle of the responsibility of parents for the full or partial support of their children, while inmates of the institution, recognized and enforced? If so, what is the average annual sum per inmate received from this source?

The law makes the same provision as in the case of reformatories. In Scotland the parish is liable to contribute if the child has been chargeable within three months.

6. What is the total average sum?

Including payments by parishes in Scotland, about £5,000 per annum.

7. What is found to be the effect of the practical application of this principle?

8. What are the ordinary kinds of work in the reformatories?

See answer to questions on reformatories.

9. What, about, has been the net average annual value per inmate of the work; distinguishing that of work employed on articles sold to the public from that of work done for the reformatory?

About £1 per annum per head, or less than 6*d.* per week.

10. In what large reformatory, last year, and in what small one were the net earnings the highest per head; and what were the amounts?

The children are mostly too young for their work to be profitable.

11. What is the average number of inmates in each of these two reformatories?

[No answer.]

12. To what circumstances, in each case, are the comparatively high earnings attributable?

13. What has been the average annual cost of each inmate, including food, clothing, and a proportionate share of salaries, of the estimated rent, and of every other expense whatever, deducting the money received for work, but not the payment by the parents?

Industrial schools are of two sorts. One class are for boarders only; the other for boarders and day scholars who are only partially fed. In these last the cost per head cannot be accurately distributed. In boarding schools, the cost is, for England: boys, about £17 per annum; for girls, £16; for Scotland, boys and girls, about £12.

14. What has been the total average annual cost, so reckoned, of all the inmates?

In 1870, £188,788 14*s.* 10*d.*

15. Is the family or congregate system in use?

The congregate.

16. For what kind of offenses are the children usually committed?

Vagrancy, begging, companions of thieves, &c., up to fourteen years of age; petty theft, up to twelve years. (See industrial school act, § 14.)

17. What is the process of committal?

By two magistrates in England; one magistrate in Scotland. (See act.)

18. What are the usual periods of sentence?

From three to seven years, or up to sixteen years of age.

19. Must the full term be served out, or may the children be discharged, as reformed, prior to the expiration of their sentence?

20. If they can be so discharged, with whom is this power lodged?

The rules are the same as for reformatories. See answer for these.

21. Are the children who have been discharged as reformed considered still, to some extent, under the care of the institution, so that they can be returned to it if not doing well; or is their discharge unconditional?

Same as for reformatories.

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22. Within what ages are children admissible?

The act prescribes no minimum age; but practically very few are sent under six years of age. The Treasury makes no allowance for any younger than six; maximum age, fourteen.

23. Are both sexes received into the same institution? If so, are they kept entirely separate, or is association permitted within certain limits?

Some schools receive children of both sexes, but most are for either boys or girls; when both sexes are received they usually meet and associate at meals, prayers, and school hours.

24. In what ways are the children disposed of on their discharge?

25. How is the time divided in regard to labor, schooling, sleep, and recreation?

26. Is the discipline most like that of a prison or of a family school?

27. Do the inmates sleep in common dormitories or in separate apartments? If in common dormitories, what supervision is had over them?

In all these points the answers are the same as for reformatories.

28. What proportion of the children are found wholly illiterate on committal?

Probably more than half; we have no exact returns.

29. What branches of learning are taught; and how far are the children carried therein?

Reading, writing, ciphering.

30. Has each industrial school a library, including secular as well as religious books? If so, do the children make much use of the books? What time do they have for reading?

Yes; Sundays and winter evenings.

31. Has each institution a chaplain? If so, what are his duties, and how much of his time is devoted to them?

The Middlesex industrial school has a chaplain who officiates in the chapel of the institution, and superintends the school-teaching and correspondence.

32. If there be no chaplain, how is his place supplied?

The superintendent conducts the weekly prayers, and gives religious instructions. On Sunday the children attend some church or chapel.

33. What rewards are employed as a *stimulus* to good conduct?

34. Is the principle of progressive classification in use? If so, how is it worked, and with what effect?

35. What disciplinary punishments are employed?

The same as for reformatory schools.

36. In what large industrial school, last year, and in what small one, were the numbers of punishments least; and what were they?

[No answer.]

37. To what circumstances are these comparative exemptions from punishment, in each instance, attributable?

[No answer.]

38. Are the antecedents of the inmates made matter of record?

39. How far is their history, while connected with the institution, recorded?

40. To what extent, and in what ways, are a knowledge of, interest in, and care over them, kept up after their discharge; and with what results?

Same as for reformatory schools.

41. What proportion of the children are orphans by the loss of one or both parents?

42. What proportions are otherwise outside of the normal family rela-

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tion, by reason of having vagrant, vicious, or criminal parents, or from any other circumstances?

The whole number admitted in 1870 was 2,599; of these were orphans, 398; illegitimate, 164; lost one parent, 843; deserted by parents, 340; one or both parents criminal, 165.

43. What, in general, is the sanitary state of each industrial school as regards food, drainage, ventilation, water supply, hospital accommodation, means and enforcement of personal cleanliness, &c., &c.?

Good.

44. What are the prevalent diseases, and what the average death-rate?

A large proportion of the children, especially of those sent to Scotch schools, are scrofulous and consumptive; but the death-rate for 1870 was only 1.75 (1¾) per cent.

45. In what large industrial school, and in what small one, were the rates of mortality smallest; and what were they?

[No answer.]

46. To what circumstances are these small rates attributable?

[No answer.]

47. What are the regulations regarding the correspondence of the inmates and the visits of friends; and what influence are these found to exert upon them?

Same as for reformatory schools.

48. What is the average period of continuance in the industrial schools?

Five or six years.

49. Is there any special arrangement for training officers for industrial schools?

No.

50. What proportion of the inmates are believed on their liberation to be reformed; and upon what *data* is this belief grounded?

Of 1,729, discharged in 1867, 1868, 1869, we had the following results: December 31, 1870, died since discharged, 44; doing well, 1,175; doubtful, 138; unknown, 270; convicted of crime, 102. The *data* are the same as for reformatories.

51. General and miscellaneous remarks.

The industrial school act, the inspectors' annual report, and the rules and regulations for industrial schools, will afford further details.

SYDNEY TURNER,

Her Majesty's Inspector of Industrial Schools, 15 Parliament street.

VII.—IRELAND.

The Convict Prisons of Ireland.

1. What is the number of government convict prisons in Ireland, distinguishing between those designed for the different sexes?

The whole number is four—three male and one female.

2. What is the aggregate capacity of the convict prisons, (*a*,) the males, (*b*,) for the females?

Male: Mountjoy, 496; Spike Island, 712; Lusk, 100—1,308. Female: Mountjoy, 547.

3. How many of these prisons are wholly upon the separate system?

4. In how many is there provision, after the first period of imprisonment, for other stages of discipline, including associated labor?

The Mountjoy male and female prisons are on the separate system,

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but after the first stages of imprisonment, the prisoners are worked in association by day.

5. How, in each class of prisons, is separation carried out, as regards work, exercise, (other than work,) attendance in chapel, and sleep?

See copies of the daily routine of the respective prisons forwarded herewith.

6. How many convict prisoners are placed (under contract with the local authorities) in prisons not belonging to the government?

None.

7. What is the aggregate number of cells?

Mountjoy, male, 496; Spike Island: ward cells, 688; light punishment cells, 22; dark cells, 6—716. Lusk: no cellular accommodation. Total, 1,212. Mountjoy, female, 505.

8. What are their ordinary dimensions?

Mountjoy, male, 13 feet long, 7 feet wide, 9 feet high. Spike Island: 372 cells are each 6 feet long, 3 feet 7 inches wide, 7 feet high; 316 cells are each 7 feet long, 4 feet wide, 7 feet high; 11 cells are each 11 feet long, 7 feet wide, 8 feet 6 inches high; 11 cells are 11 feet long, 7 feet wide, 10 feet 9 inches high; and 6 cells are 8 feet long, 6 feet wide, 8 feet 10 inches high. Mountjoy, female, 7 feet long, 4 feet wide, 7 feet 6 inches high; and 12 feet long, 7 feet wide, 9 feet 6 inches high.

9. What furniture do they generally contain?

Mountjoy, male: table, stool, hammock, &c., washing-basin, quart-tin, and plate. Spike Island: hammock, mattress, pillow and bedding, form table, water-can, washing-basin, urinal, drinking-cup, salt-cup, spoon, candlestick, comb, towel, coir cell brush. Mountjoy female: table, stool, bed, bedding, and towel, dusting, shoe, and hair brushes, combs, (2,) quart tin, tin dish, basin, spoon, and chambers, (2.)

10. What are the rules, framed according to law, in regard to the certification of the cells, and their visitation by officers; and in respect to the visits to the prisons by the inspectors of prisons?

See copies of rules approved of by the Irish government, forwarded herewith.

11. How far are these rules carried into effect?

They are fully carried out.

12. What has been the average number of prisoners in the convict prisons in the last five years?

See appendix to annual report for 1870, herewith.

13. What are the chief internal regulations of these prisons?

See daily routine, and copies of rules for prisoners herewith.

14. How are the officers appointed, and what is their tenure of office?

They are appointed by the Irish government, at whose pleasure they hold office.

15. What qualifications are required, and in what manner are they tested?

Test examination by civil-service commissioners. See candidates' form herewith.

16. What provision is made for superannuated and disabled officers?

Pensions and compensations are awarded by the lords commissioners of Her Majesty's treasury, under the scales laid down by the superannuation acts.

17. Are rewards employed to stimulate the prisoners to good conduct and industry? If so, of what kinds and to what extent?

Yes; classification, gratuities, and a remission of portion of imprisonment by release, or license, &c. Fully explained in rules and forms herewith.

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18. Is there a system of progressive classification? If so, how is it worked, and with what results?

Yes. See rules which explain the working of classification. Results are satisfactory.

19. What punishments are used for breaches of prison rules or other misconduct?

Privation of diet and reduction in classification. See rules.

20. Is corporal punishment ever employed?

Very rarely.

21. Is a full record of punishments kept?

Yes.

22. What kind of offenses are most common?

Insolence, unnecessary talk, and inattention to orders.

23. In what convict prison last year was the number of punishments least, and what was it?

In Lusk.

24. To what circumstances is this comparative exemption from punishment attributable?

Entirely owing to the exceptional circumstances of the establishment and to the class of prisoners sent there.

25. Are prisoners always allowed to make complaints of grievances, real or fancied? If so, to whom; and what attention is paid to their complaints; and what security is there that the complaints shall be properly examined?

Yes; to directors, or governors, or superintendents of the prisons. Statement taken down in writing, and decision made accordingly. See rules.

26. How far are moral forces used in the discipline of the convict prisons, and what is found to be the comparative efficacy of moral and coercive agencies?

See rules. We are unable to state whether good prison conduct is the result of the moral or coercive agency of the system.

27. Do the inmates of the convict prisons wear a party-colored dress?

The male prisoners wear frieze, with a distinctive stripe. The female prisoners are, as at all large institutions, dressed alike.

28. Is your own opinion for or against such a prison dress; and, in either case, upon what grounds?

Yes; as a precaution against escape, and to secure uniformity.

29. Is the mask worn in the Irish convict prisons? What is your judgment of its utility or the reverse?

No.

30. To what extent are chaplains employed, and of what denominations are they?

Chaplains of the Episcopal, Presbyterian, and Roman Catholic denominations; regularly appointed officers of the prison, who devote their time to the religious instruction of the prisoners. See rules.

31. What religious services are held on Sunday and during the week?

See daily routine.

32. Are religious tracts and papers distributed to the convicts?

No; but approved religious books are supplied to the prisoners.

33. Are volunteer working visitors of either or both sexes admitted into the prisons? If so, under what restrictions and with what results?

Not at the male prisons. Ladies of a religious community visit the

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Roman Catholic convicts, and ladies of their own persuasion the Episcopalians and Presbyterians, to prepare them for the refuges.

34. In what spirit do the prisoners receive efforts for their moral and religious improvement?

Generally satisfactory.

35. What are the regulations relating to the correspondence of prisoners?

See rules.

36. What in relation to visits from friends?

See rules.

37. Are the letters and visits of friends found to be beneficial to the prisoners or otherwise?

Usually beneficial.

38. What proportion of prisoners are found, on their admission, either wholly illiterate or so imperfect in their knowledge of reading as to derive neither instruction nor entertainment from it?

Males, 21.74 per cent.; females, 63.22 per cent.

39. What provision is made for the schooling of prisoners?

Schoolmasters and schoolmistresses are attached to each prison.

40. What branches are taught, and what progress is made therein?

See schoolmasters' and schoolmistresses' reports, in directors' annual reports.

41. Is there a library in each convict prison, including secular as well as religious books?

Yes.

42. What, about, is the average number of volumes?

Mountjoy, male, 592. Mountjoy, female, 290. Spike Island—secular books, 380; religious books, 4,180; total, 4,560. Lusk—library books, 50.*

43. Do many of the prisoners show a fondness for reading?

Yes.

44. What time have they for reading?

About an hour each evening, and on Sundays and holidays.

45. What, in a general way, are the sanitary arrangements and condition of the prisons?

The sanitary arrangements of the prisons are excellent, and the condition of the prisons satisfactory.

46. What are the prevailing diseases?

Colds, mild febrile and pulmonary affections. See reports from medical officers in directors' annual reports.

47. What has been the average annual death-rate for the last five years?

See appendix, directors' annual report for 1870.

48. In what prison last year was the rate of mortality smallest, and what was that rate?

Mountjoy, male, no death in the year 1870.

49. To what circumstances is this small rate attributable?

The satisfactory sanitary state of the prison, as well as the limited periods of detention therein.

50. Is there a distinction made in the convict prisons between penal and industrial labor? If so, what kinds of each are in use?

The only penal labor in use is oakum-picking in Mountjoy Male Convict Prison for the first three months of a prisoner's confinement in sep-

* The religious books are chiefly Bibles, prayer-books, and catechisms of the Episcopal and Roman Catholic Churches.

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aration. The industrial labor in use consists chiefly in making mats, matting, mattresses, and shoes in Mountjoy Male Convict Prison. Tailoring, shirt-making, and washing in Mountjoy Female Convict Prison. Agricultural work at Lusk Prison, and out-door employment on public works, as stone-cutting, masonry, quarrying, and laboring at Spike Island Prison.

51. Is the deterrent effect of penal labor found to be considerable? What is found to be its effect upon the health of the prisoners? What its moral influence?

Its effect upon the health of the prisoners is not injurious. We are unable to give a decided opinion upon the other parts of this query.

52. Is penal labor utilized in the convict prisons? If so, what is its average daily value in money *per capita*?

Each prisoner. for the first three months of his confinement in Mountjoy Male Convict Prison, is required to pick daily four pounds of oakum, value about 2½*d*.

53. Upon what principle is the industrial labor of the convict prisons organized; on a contract system or some other?

See tables of the estimated value of prisoners' labor in the published annual reports.

54. What have been the average annual net earnings, per head, of the prisoners in the last five years, exclusive of any portion allowed to the prisoner himself?

We are unable to give any further information on this subject than what is contained in the published annual reports for the last five years, herewith. See also reply to query 59.

55. In what prison, last year, were the net earnings the highest per head; and what was the amount?

See reply to query 54.

56. What is the average number of prisoners there?

Same answer as above.

57. What are the chief kinds of work there?

Same answer as above.

58. To what circumstances are the comparatively high earnings attributable?

Same answer as above.

59. Is a prisoner allowed any portion of his earnings? If so, how is that portion determined?

The only allowance given to a convict is a gratuity, which is dependent on his classification. A prisoner has no claim to any portion of his earnings.

60. Is overwork encouraged by the prisoner being allowed all the earnings so obtained?

No; see reply to query 59.

61. Do the prisoners work by the hour, or are tasks and piecework employed as far as practicable?

Chiefly by the hour; piecework is in use as far as practicable in the female prison.

62. How many hours each day, as measured either in time or by piecework, do the prisoners generally labor?

See daily routine.

63. What, during the last five years, has been the average annual cost of each prisoner, including food, clothing, and a proportionate share of salaries, and of the estimated rent, (say at the rate of 5 per cent. on the cost of the building,) and of every other expense whatever, but deduct-

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ing the money received for prisoners' work (if sold to the public) or its value, if employed on public works belonging to the Government, and unconnected with the prison?

A complete answer to the question cannot be furnished from this department, portions of the expenditure, as for fuel, light, buildings, repairs, rents, and taxes, being defrayed by another department.

64. How much of this cost is put down for rent?

See reply to query 63.

65. What proportion of the prisoners had not learned a trade or calling prior to their committal?

About 35 per cent.

66. Is it made an object to impart to them the art of self-help, that is, the power to earn an honest living on their discharge? If so, in what manner and with what results?

This can only be done to a certain extent; the results are satisfactory.

67. What has been the average length of sentences for the last five years?

Males, seven and one-third years and life; females, six years and eighty-five days.

68. What has been the proportion of life sentences for the last five years?

Males 3½ per cent.; females 1.35 per cent.

69. Do prisoners for life receive the same treatment as other prisoners?

Yes; excepting that they are not sent to intermediate prisons or refuges.

70. What portion of the prisoners committed in each of the last five years had been in a convict prison before?

Year.	Males.	Females.
1867	$\frac{9}{11}$	$\frac{13}{81}$
1868	$\frac{8}{12}$	$\frac{1}{75}$
1869	$\frac{5}{16}$	$\frac{1}{53}$
1870	$\frac{8}{29}$	$\frac{1}{34}$
1871	$1\frac{3}{16}$	$\frac{3}{73}$

71. What portion had been previously committed to any prison?

Year.	Males.	Females.
1867	$\frac{44}{63}$	$\frac{77}{81}$
1868	$\frac{30}{23}$	$\frac{74}{75}$
1869	$\frac{42}{40}$	$\frac{51}{53}$
1870	$\frac{34}{71}$	$\frac{24}{34}$
1871	$\frac{13}{16}$	$\frac{68}{73}$

72. From what *data* have the re-committals been ascertained?

Personal identification, records received with prisoners from county and city jails, and by photography.

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73. What proportion of the prisoners were minors when committed?

Year.	Males.	Females.
1867	8.43	1.81
1868	12.97	.75
1869	13.66	2.53
1870	9.31	4.68
1871	15.62	1.72

74. Is deterrence or reformation made the primary object?

Both deterrence and reformation are combind in the Irish system.

75. Are the prisoners able, by industry and good conduct, to shorten their periods of confinement? If so, to what extent?

Yes. See scale herewith.

76. What do you think of the policy of substituting unlimited for limited periods of imprisonment, to which criminals are sentenced, so as to make the time of liberation depend on the prisoner's moral condition, and the reasonable expectation of his not relapsing into crime?

Mr. Murray is of opinion that, subject to the modifications suggested to the transportation committee of the House of Commons, first report 1856, by Mr. M. D. Hill, unlimited imprisonment would be a wise and most valuable addition to the criminal code of the nation. See, also, Mr. Hill's charge for October, 1855, and the sequel to it in his "Suggestions for the repression of crime." Captain Barlow does not approve of such a policy.

77. Under present circumstances, are prisoners often set free before their liberation can be considered safe to society, or really beneficial to themselves; whether because their moral cure cannot be deemed complete, or because they have not the means of getting an honest livelihood, either from want of a sufficient knowledge of some handicraft, or from physical or mental weakness?

Mr. Murray replies to all the points arising in this query in the affirmative, and hence one of his grounds of belief, as stated in his reply to 76, are the advantages of unlimited imprisonment.

78. On the other hand, are prisoners often detained beyond the time when it is fully believed that they could safely be liberated?

Some such cases occur. Mr. Murray states that in his opinion such cases do beyond all doubt occur.

79. Is the "intermediate system," for gradually preparing prisoners for liberation, in use? If so, to what extent, and with what results?

Yes; with satisfactory results. Details will be found in annual reports.

80. Do the mass of prisoners, as a matter of fact, leave the prisons better or worse, morally, than they entered them?

If not re-convicted, it is to be assumed that improvement has taken place.

81. Are female prisoners, needing such instructions, taught to cook and sew; and, generally, are efforts made to enable a man or woman, on liberation, to avoid a wasteful expenditure, and to turn their wages to the best account?

Yes; to sew, and, to a certain extent, to cook. Our answer to the second part of the question, is: As far as possible.

82. Is any attempt made to give the prisoners good tastes, such as

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that for music, so as to diminish the danger of their falling, when liberated, into habits of drunkenness, or other debasing pleasures?

We should consider any such arrangement as teaching music unsuitable in a prison.

83. Is any effort made to induce the prisoners, from their share of their earnings, to help to support their families, or to make restitution to those whom they have robbed, or otherwise injured?

The only case in which convicts can assist their families is where they had, on conviction, private property; this, under certain regulations, they can send to their friends.

84. If not, is there any other way in which they can practically give that evidence of moral improvement which is afforded by a willingness to forego selfish advantages for the benefit of others?

No.

85. Are efforts made to keep up the domestic ties of prisoners, such as allowing them to see members of their family, from time to time, except when, under the circumstances, these ties must be hurtful?

Yes; such efforts are made; prisoners are allowed to be visited by friends when their conduct merits it. See rules.

86. What agencies are employed to provide discharged prisoners with work, in order to prevent their relapse; and with what results?

An agent in the case of male prisoners is appointed, with satisfactory results. See reply to query 87.

87. Are any other efforts made, through prisoners' aid societies, refuges, or otherwise, to encourage discharged prisoners, desirous of doing well, and to prevent their relapse?

Yes; by the "Golden Bridge Refuge" and the "Shelter," for females.

88. What means are taken to trace prisoners after their discharge, in order to ascertain what is their subsequent career?

Not beyond expiration of sentence. While on license the convicts are under police supervision provided by fifth section of prevention of crimes act, 1871. (Copy herewith.)

89. General and miscellaneous remarks.

Such full details are given of the working of the system, in the annual reports, that we consider remarks unnecessary.

PATRICK JOSEPH MURRAY,
J. BARLOW,

Directors.

MARCH 6, 1872.

MOUNT JOY MALE PRISON.

Daily routine of prisoners in separation and association.

In summer—hours.	Disposal of time—prisoners in separation.	In winter—hours.
5.30 a. m.	First bell, prisoners rise, wash, make their beds, and sweep their cells.	6.30 a. m.
6 to 7 a. m.	Exercise	7 to 8 a. m.
7 to 9 a. m.	Work in cells	8 to 9 a. m.
9 to 9.30 a. m.	Breakfast hour	9 to 9.30 a. m.
9.30 to 2 p. m.	Work in cells, except one hour's schooling, daily, for first and second school classes, and one hour's schooling three days in the week for third school class.	9.30 to 2 p. m.
2 to 3 p. m.	Dinner hour and school-teaching in cells	2 to 3 p. m.
3 to 7 p. m.	Work in cells	3 to 7 p. m.
7 to 7.15 p. m.	Supper, and double-lock prisoners retire to bed at 8½ o'clock, and gas extinguished in cells at 8½ o'clock, p. m.	7 to 7.15 p. m.

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Ten and a half hours' work daily in summer and nine and a half hours in the winter months.

Roman Catholic prisoners, in separation, attend chapel from 7 to 8 o'clock a. m., on Tuesdays, Thursdays, and Fridays. Protestant prisoners, in separation, attend church from 10 to 11 o'clock a. m., on Mondays, Fridays, and Saturdays. Sundays and holidays Roman Catholic prisoners attend mass from 7 to 8 a. m. Religious instructions from 12 to 1 p. m. The Protestant prisoners at Divine service from 10 to 11 a. m.; Presbyterian prisoners from 8 to 9 a. m. The remainder of the day is devoted to reading in cells, except two hours for exercise.

In summer—hours.	Disposal of time—prisoners in association.	In winter—hours.
5.30 a. m.	First bell, prisoners rise, wash, make their beds, and sweep their cells.	6.30 a. m.
6 to 8 a. m.	Work	7 to 8 a. m.
8 to 9 a. m.	Exercise	8 to 9 a. m.
9 to 10 a. m.	Breakfast hour	9 to 10 a. m.
10 to 2 p. m.	Work	10 to 2 p. m.
2 to 3 p. m.	Dinner hour	2 to 3 p. m.
3 to 6 p. m.	Work, except one hour's exercise daily to the advanced class	3 to 6 p. m.
6 to 7 p. m.	School	6 to 7 p. m.
7 to 7.15 p. m.	Supper, and double-lock prisoners retire to bed at 8¼ o'clock, and gas extinguished in cells at 8¼ o'clock p. m.	7 to 7.15 p. m.

Nine hours' work daily in summer and eight hours' in the winter months.

Prisoners, in association, attend chapel from 7 to 8 o'clock a. m., on Tuesdays and Fridays; with these exceptions, the routine is the same as on the other days. On Sundays and holidays the Roman Catholic prisoners attend mass from 7 to 8 a. m., and for religious instructions between 12 and 1 o'clock p. m., and the Protestant prisoners attend Divine service from 10 to 11 a. m., and the Presbyterian prisoners from 8 to 9 a. m. The remainder of the day is devoted to reading in their cells and exercise.

The Protestant prisoners attend at religious instructions on Mondays from 10 to 11 a. m., and on Fridays at Divine service from 10 to 11 o'clock a. m., and on Saturdays, for issue and exchange of books, from 10 to 11 a. m.

P. N. HACKETT,
Governor.

FEBRUARY 9, 1872.

MOUNT JOY FEMALE CONVICT PRISON, JANUARY 23, 1872.

Daily routine for summer months.

Prison unlocked at 6 o'clock a. m.
Prisoners' breakfast served at 6.30 a. m.
Matrons' breakfast hour, 1st, 6.45 to 7.45 a. m.
Matrons' breakfast hour, 2d, 7.45 to 8.45 a. m.
Prisoners' dinner served at 11.30 a. m.
Matrons' dinner hour, 1st, 11.45 a. m. to 12.45 p. m.
Matrons' dinner hour, 2d, 1 to 2 p. m.
Prisoners' supper served at 5.15 p. m.
Prison locked at 6 p. m.

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PRAYERS.

Roman Catholic prisoners, probation class, 8.40 to 9 a. m.

Morning.

Protestant and Presbyterian prisoners, 6 to 6.20 a. m.
A, First, second, third, and probation classes, (morning.)
Roman Catholic prisoners, second and third classes, 4 to 4.20 p. m.

Evening.

Roman Catholic, first and A classes, 4.45 to 5.5 p. m.
Protestant and Presbyterian prisoners, 4.45 to 5.5 p. m.
First and A classes, evening.

SCHOOL HOURS.

From 8 to 11 a. m., and from 2 to 4.30 p. m., daily, (Saturdays excepted.)
Second and third class prisoners attend daily from 2 to 3 o'clock p. m.
Probation class, from 3 to 4.15 p. m., daily.
First and A class prisoners on alternate days, from 9 to 11 a. m.; of these classes, the prisoners in third and fourth books, and those employed in cleaning the prison, join the others from 10 to 11 a. m.
Refuge class not employed in laundry, (those employed in laundry do not attend at all,) from 8 to 9 o'clock a. m., daily.
Hours of labor, 9½ daily.
Prayers, exercise, school, and labor go on simultaneously.

DELIA I. SIDWILL,
Superintendent.

MOUNT JOY FEMALE CONVICT PRISON, JANUARY 23, 1872.

Daily routine for winter months.

Prison unlocked at 7 o'clock a. m.
Prisoners' breakfast served at 7.15 a. m.
Matrons' breakfast hour, 1st, 7.30 to 8.30 a m.
Matrons' breakfast hour, 2d, 8.30 to 9.30 a. m.
Prisoners' dinner served at 12 m.
Matrons' dinner hour, 1st, 12.15 to 1.15 p. m.
Matrons' dinner hour, 2d, 1.30 to 2.30 p. m.
Prisoners' supper served at 5.15 p. m.
Prison locked at 6 p. m.

PRAYERS.

Roman Catholic prisoners, probation class, 9.40 to 10 a. m.

Morning.

Protestant and Presbyterian prisoners, 7 to 7.20 a. m.
A, first, second, third, and probation classes, morning.
Roman Catholic prisoners, second and third classes, 4.30 to 4.50 p. m.

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Evening.

Roman Catholic, first and A classes, 4.45 to 5.5 p. m.
Protestant and Presbyterian prisoners, 4.45 to 5.5 p. m.
First and A classes, evening.

SCHOOL HOURS.

From 8.45 to 11.30 a. m., and from 2 to 4.30 p. m., daily, (Saturday excepted.)

Second and third class prisoners attend daily from 2 to 3 p. m.

Probation class prisoners attend from 3 to 4 p. m.

First and A class prisoners on alternate days from 9.30 to 11.30 a. m. Of these classes, the prisoners in third and fourth books, and those employed in cleaning the prison, join the others from 10.30 to 11.30 a. m.

Refuge class not employed in laundry, (those employed in laundry do not attend at all,) from 8.45 to 9.30 a. m., daily.

Hours of labor, 9 daily.

Prayers, exercise, school, and labor go on simultaneously.

DELIA I. SIDWILL,
Superintendent.

MOUNT JOY FEMALE CONVICT PRISON.

Sunday routine for winter months.

Prison unlocked at 7 a. m.

Roman Catholic service (1st) from 7.15 to 8 o'clock a. m.

Roman Catholic service (2d) from 8.15 to 9 o'clock a. m.

(Half the number of prisoners attend the first service and the other half the second service.)

Protestant service from 7.15 to 8.15 a. m. (For all Protestant prisoners.)

Presbyterian service from 10 to 11 o'clock a. m. (For all Presbyterian prisoners.)

Benediction for the Roman Catholic prisoners who attended the first service from 11 to 12 a. m.

Prayers for all creeds from 12 noon to 12.30 p. m.

Matrons' breakfast hour (1st) from 8 to 9 o'clock a. m.

Matrons' breakfast hour (2d) from 9.15 to 10.15 a. m.

Prisoners' breakfast served at 9 o'clock a. m.

Matrons' dinner hour (1st) from 11.45 a. m. to 12.45 p. m.

Matrons' dinner hour (2d) from 1 to 2 o'clock p. m.

Prisoners' dinner served at 12.40 o'clock p. m.

Probation, third, second, laundry, and invalid classes, exercised before the dinner hour, and the first and advanced classes from 2.15 to 3.15 p. m.

Prisoners' supper served at 4 o'clock p. m.

Prison locked at 5 o'clock p. m.

DELIA I. SIDWILL,
Superintendent.

FEBRUARY 12, 1872.

MOUNT JOY FEMALE CONVICT PRISON.

Sunday routine for summer months.

Prison unlocked at 6.30 o'clock a. m.

Roman Catholic service (1st) from 6.45 to 7.30 o'clock a. m.

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Roman Catholic service (2d) from 7.45 to 8.30 o'clock a. m.
Protestant service from 6.45 to 7.45 o'clock a. m.
Presbyterian service from 10 to 11 o'clock a. m.
Matrons' breakfast hour (1st) from 7.30 to 8.30 o'clock a. m.
Matrons' breakfast hour (2d) from 8.45 to 9.45 o'clock a. m.
Prisoners' breakfast served at 8.30 o'clock a. m.
All the other arrangements same as given in winter months, Sunday routine.

DELIA I. SIDWILL,
Superintendent.

FEBRUARY 12, 1872.

SPIKE ISLAND CONVICT PRISON.

Detailed statement of the daily routine.

SUMMER.

First bell, 5 *o'clock a. m.*—Prisoners arise and make up beds; officers same and collect in the prison from outside.

Second bell, 5¾ *a. m.*—Parade of officers; unlock prison, draw rations, and serve breakfast.

Third bell, 6¼ *a. m.*—Breakfast, officers and prisoners, the intern guard (second relief) continuing on duty.

Fourth bell, 6¾ *a. m.*—Parade of day-officers; prison unlocked, and officers and prisoners attend their respective places of worship. Prayers read for the Protestants and Presbyterians by officers of these persuasions, the Roman Catholic chaplain or his assistant officiating in chapel; time occupied in prayers from fifteen to twenty minutes.

Fifth bell, 7¼ *a. m.*—Parade after prayers. Prisoners marched to their respective places of employment, where they remain until dinner-bell, at quarter to 12 noon.

Sixth bell, quarter to 12 *noon.*—Prisoners recalled from work for dinner. Prison locked up at 12 o'clock noon, the two night-reliefs (with the exception of those on leave) posted on extern and intern duty during the dinner-hour.

Seventh bell, 1 *p. m.*—Warders parade and unlock prison. Prisoners marched to labor under their respective officers and remain on the works until 6 p. m., when the recall-bell rings and supper is served out. Schooling is carried on in the prison up to 8 o'clock p. m.

WINTER.

The winter routine is the same as the summer, except that the unlocking in the morning and the locking up at night varies with the light, according as the days shorten and lengthen, and that during the winter months the warders breakfast before going on duty.

The Protestant and Presbyterian chaplains attend two days a week each, viz: Tuesday and Saturday, and on Saturday afternoons portions of the prisoners of each religious persuasion are withdrawn from the works and receive instructions from their respective chaplains for two hours.

The entire body of the convicts leave off work two hours earlier on Saturdays than on other week-days for the purpose of bathing and feet-washing, cleaning shoes, exchanging clothing, &c.

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Sunday routine.

First bell, 6¾ *a. m.*—Prisoners arise and make up beds.

Second bell, 7 *a. m.*—Parade of officers; unlock prison, draw rations and serve breakfast.

Third bell, 7½ *a. m.*—Prisoners parade and attend mass till about 8½ a. m.; they are then marched to their respective wards and locked up.

Fourth bell, 8½ *a. m.*—Prison officers paraded and dismissed to breakfast, the intern duty being taken up by the first relief of the previous night.

Fifth bell, 9½ *a. m.*—Officers parade after breakfast and unlock prison, the sick are taken to hospital, the Presbyterian prisoners attend service, and the others are exercised by classes round the prison square.

Sixth bell, 10.55 *a. m.*—Roman Catholic service, which is over about 12½ o'clock or soon after, exercise till 12¾ o'clock. Protestant service from 11¾ to 12½.

Seventh bell, 1 *p. m.*—Dinner served. Dinner hour from 1¼ to 2¼ for both officers and prisoners; 2¼ o'clock parade of prisoners, and their persons and clothing inspected by the chief and principal warders. Prisoners at exercise or reading in their wards till lock-up, which is at 6 o'clock in summer and varies with the light in winter.

PETER HAY,
Governor.

JANUARY 19, 1872.

LUSK CONVICT PRISON.

Daily routine of duty for prisoners.

5 a. m. Ring bell; fold bedding and dress.
5.30 a. m. Ring bell; officers parade, unlock huts, and roll-call.
5.45 a. m. Ring bell; prayers.
6 a. m. Ring bell; breakfast.
6.30 a. m. Ring bell; parade prisoners in classes to work.
12 p. m. Ring bell; dinner.
1 p. m. Ring bell; resume work.
5 p. m. Ring bell; return from work, and supper.
5.30 a. m. Ring bell; to school and lecture.
7.30 p. m. Ring bell; make beds.
7.45 p. m. Ring bell; to prayers.
8 p. m. Ring bell; count prisoners; lock up.
9 p. m. Ring bell; to bed.

R. GUNNING,
Superintendent.

LUSK CONVICT PRISON.

Daily routine of prisoners' employment on Sundays and holidays.

6.00 a. m. Ring bell; fold bedding and dress.
6.30 a. m. Ring bell; officers parade; unlock huts.
6.45 a. m. Ring bell; breakfast.
8.00 a. m. Ring bell; prisoners let out to exercise.
8.30 a. m. Ring bell; count all; Roman Catholics to prayers, at village chapel.
11.00 a. m. Ring bell; Roman Catholics from prayers; parade all.

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11.45 a. m. Ring bell; parade all; Protestants to prayers at village church.
12.30 p. m. Ring bell; prisoners to read in hut.
1.30 p. m. Ring bell; prisoners let out to exercise.
2.00 p. m. Ring bell; Protestants return from prayers; dinner.
2.30 p. m. Ring bell; lecture.
3.00 p. m. Ring bell; prisoners let out to exercise.
4.00 p. m. Ring bell; general parade.
4.45 p. m. Ring bell; make beds.
5.00 p. m. Ring bell; supper.
6.00 p. m. Ring bell; to read in hut.
7.45 p. m. Ring bell; to prayers.
8.00 p. m. Ring bell; count prisoners; lock up.

LUSK CONVICT PRISON.

Employment of time in school.

Day.	Subjects.
Monday	Reading, spelling, writing, arithmetic
Tuesday	Reading, writing, English grammar.
Wednesday	Geography from maps, exercises on ship.
Thursday	Reading, spelling, writing, from dictation.
Friday	Competitive examination.
Saturday	Simple accounts.
Sunday	Moral lessons.

Hours of instruction from 5½ till 7½ p. m.

C. DALY,
School Instructor.

VIII.—RUSSIA.

[No answers were furnished by the Russian government to the questions submitted; but Count W. Sollohub, the originator, six years ago, of an exceedingly interesting experiment in prison discipline at Moscow, communicated a paper, detailing the progress and results of that experiment down to June 1, 1872. He had previously, several years since, communicated, for publication in one of the annual reports of the New York Prison Association, a more general paper, giving a full description of the prison system of the Russian empire. The essay now furnished is a sequel to the former; and as that gave an account of the establishment and early workings of the house of correction at Moscow, this gives the results of six years of intelligent and earnest work in it; results which must be regarded as equally remarkable and gratifying. Its perusal cannot fail to interest and instruct all who watch the signs of progress in this important department of social philosophy.]

1. COUNT SOLLOHUB'S REPORT.

[Translation.]

The paper sent to the Prison Association of New York was written at the time when the house of correction at Moscow had just inaugurated

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a new prison system. That system took for its basis a theory of prison labor till then unknown. It maintained, so far as the execution of the sentence was concerned, the most inflexible rigor. But it did not lose sight of the day when the prisoner should recover his liberty. In view of that day it prepared for the liberated convict the possibility of acquiring habits of order, useful knowledge, and a capital in money, indispensable as a shield against new temptations. The system thus offered a twofold combination—that of preventing relapses and that of augmenting the resources of the administration by giving to the prisoners an interest in the profits of the establishment. It was necessary to await, from time, the results of this experiment. We are already able to cite some statistics which have a mute eloquence.

The prison entered upon its untried path in 1865, though still embarrassed by the progress of the constructions, and amid the hesitations which always accompany a new experiment. A report, published June 1, 1871, furnishes the following results: There were admitted into the two houses of correction—male and female—from 1865 to 1871:

	Men.	Women.
Sentenced for a term of more than a year	1,316	200
Sentenced for a term of less than a year	486	207
Imprisoned by desire of their parents	17	2
Total	1,819	409
		1,819
Grand total		2,128

It is necessary here to call attention to the fact that, as the fixing of the minimum of one year for correctional imprisonment is made the object of general legislative measures, the house of correction of Moscow could not be an exception. It is, therefore, only from a population of 1,316 men and 200 women that a judgment can be formed of the effect of the new system. The results of the industrial workshops, shown by the statistics, are as follows:

Prisoners recognized in the prison as master-workmen and who have become entitled to wages:

Boot-makers	164 since 1865.
Hosiers	136 since 1865.
Weavers of linen	84 since 1868.
Weavers of woolen stuffs	103 since 1869.
Weavers of ribbons	93 since 1868.
Weavers of galloons	110 since 1867.
Weavers of belts	50 since 1868.
Weavers of scarfs	17
Shoemakers	69 since 1865, closed in 1868.
Book-binders	29 since 1865, closed in 1868.
Preparers of chips	35 since 1866, closed in 1867.
Glovers	1 since 1866, closed in 1866.
Cotton-spinners	2 since 1866, closed in 1868.
Makers of binders' boards	8 since 1865, closed in 1871.
Tailors	58 since 1866.
Makers of cigarettes	56 since 1868, closed in 1871.
Total	1,015

Thus the prison has given back to society 1,015 artisans, the majority of whom had previously no knowledge of a trade.

The following table affords proof that the prisoner, moved by the hope of regaining for himself a position above want, becomes an excellent workman, and so is able to break off from those vicious habits which were sure to plunge him again into misery.

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The report shows that the industrial labors thus executed have produced—

Boots	15,425	pairs.	Shoes	41,733	pairs.
Hosiery	22,888	pieces.	Binders' boards	9,065	pieces.
Thread	64,015	archines.	Cuttings of chips	1,653	pounds.
Woolen cloth	57,363	archines.	Gloves	1,710	pieces.
Ribbons	1,156,192	archines.	Calicoes	9,600	pieces.
Galloons	1,324,803	archines.	Manufacture of wearing apparel	4,132	pieces.
Girdles	36,653	pieces.			
Scarfs	27,016	pieces.			

In addition to the above, the women have knit 20,162 pairs of stockings and made 310 nets.

Each workman being pushed on by his own interest and the fear of fines, which have not in the aggregate exceeded 216 rubles 51 copecks in six years, there is no occasion to stimulate his zeal or to have recourse to measures of severity.

The earnings of the master-workmen amounted, during that time, to the sum of 10,062 rubles 79 copecks for the day of liberation, and 4,020 rubles 55 copecks spent in the purchase of tea, which the master-workmen distributed to their apprentices. The earnings received by the prisoners have, therefore, amounted to 14,082 rubles 34 copecks. The treasury of the administration has received for its share of the profits only 6,705 rubles 98 copecks, the result of the skilled labor, but it has gained abundantly from the unskilled labor. The washing done for the hospitals and alms-houses in the neighborhood has brought in 7,812 rubles 97 copecks. For the prison itself it has saved an expenditure, which would otherwise have been necessary, of 3,932 rubles 95 copecks, to say nothing of mending to the value of 650 rubles 75 copecks. The products of the kitchen-gardens represent a sum amounting to 6,867 rubles 73 copeks.

In addition to the above, there were made 3,949,459 wrappers for newspapers, realizing to the administration 1,036 rubles 50 copecks.

In a word, if the value of the unskilled and gratuitous labor of the prisoners had been estimated, they would have represented 135,705 days of labor, amounting in value to at least 9,840 rubles 61 copecks.

The sum total of the general revenue of the prison, it will thus be seen, has amounted to 50,498 rubles 70 copecks. If there be added the savings on the expenses allowed on the maintenance, &c., which have amounted in six years to 10,267 rubles 35 copecks, spent in the purchase of linen, clothing, &c., the general balance-sheet will represent a total gain of 60,766 rubles 17 copecks, of which sum about one-fourth will have gone to the prison workmen and three-fourths to the administration. This proportion seems normal, and it would be difficult to obtain a proportion more advantageous, at least without impeding the reformation of the prisoners and lowering the quality of the work.

The treasury of the house of correction of Moscow contained on the 1st June, 1871, the sum of 20,603 rubles 75 copecks in vouchers and coin. The administration had not received a stiver in the way of capital for the organization of labor. The state had only altered the old buildings and added some new ones, which involved an expenditure of about 90,000 rubles. Thus it will be seen that about one-fourth of this sum had been re-imbursed in June, 1871.

The honor of such a result belongs not alone to the idea of the new system, but still more to its execution. We cannot pass in silence the services rendered in this regard by Lieutenant Colonel Mertz, immediate director of the prison. It is to his energy, his spirit of order and economy, his extraordinary integrity, and his entire devotion, that the es-

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tablishment under his direction owes its reputation, and has been able to attract the attention of the students of penitentiary science.

Do not the statistics cited above go far toward the solution of the most difficult problem in the establishment of penitentiaries, viz, the financial problem?

Who has not heard a thousand times that society, not being able to command pecuniary means for citizens who behave well, has not the moral right to draw upon them, to any great extent, for citizens who behave ill? Does it not follow that no civilized country possesses a complete and rational system of means for attaining the various ends of penitentiary discipline? Has not every country some prisons which it willingly shows, and others which it would like to conceal?

A correctional prison, such as that which we propose, is no longer an expense to the state; it is an investment. Nothing is easier than to effect a loan, with redemption guaranteed by the state. Such loan would be largely paid from the labor of the prisoners, when once they saw in that labor not simply a sterile vexation, but the only means of escaping the misery which threatens them in the future. Thus have we demonstrated by figures not only that payment might be effected without weighing heavily upon the state, but there would even be an excess of income, which would gradually form a capital for each prison, and would enable it, in time, to become self-supporting. This same calculation would serve as a guide in the case of penal prisons, which, not implying the return of the prisoners into society, would have no need to organize professional or mechanical labors, but might be devoted to great enterprises, such as improving lands, working mines, &c., &c. Joint-stock companies might, in this case, furnish capital *ad hoc*, under a stipulation that the product of the prison labor should be set apart to the re-imbursement of the loan. This would become an unfailing resource, when once the prisoners should have a share of the profits laid up against the day of their colonization, either in the mother-country or on some foreign shore. Perhaps the prisoners ought not, at first, to have the right of sharing in the profits, and the prisons might, in this view, be organized somewhat after the plan of the Irish system. But this would be a matter to be determined by experience. The general financial plan for the support of the prisons would have, in all cases, the following solutions:

The preliminary detentions to be at the expense of the municipal government.

The houses of amendment (cellular with a maximum of three months) at the expense of the state.

The houses of correction (from one to five years) to stipulate for a loan re-imbursable by the labor of the prisoners.

The penal prisons would undertake, on the same principle, enterprises to be managed either by private companies or by the administration of the state.

We had expressed the opinion, in our paper on the prison question in Russia, that imprisonment in the house of amendment should be from one day to a year. This classification was suggested by the existing laws in relation to the jurisdiction of justices of the peace. A prison established on this principle at St. Petersburg has yielded the most brilliant results as regards revenue from the workshops. It appears from this experiment that even the houses of amendment need not be a burden upon the State, and may be established by loan. But the imprisonment was too short to produce much effect upon the habits of the prisoners. Moreover, they had not time to gain from their earnings a

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capital with which to commence a new life. Numerous relapses were the result. Grave disorders ensued. The director barely escaped assassination. An event sadly memorable, the death of the Prince of Aremburgh, was the consequence of a mutiny of the prisoners, of some days' continuance. The conclusion we draw from these facts is, that the state ought to give up the idea of material profits, and establish houses of amendment, rigidly cellular, with a maximum imprisonment of three months. Such, in a few words, is the result of the experiments undertaken at Moscow and St. Petersburg—experiments which have not, as yet, been elsewhere conducted, in Russia, upon a larger scale.

No doubt a great many objections, as has heretofore been the case in other countries, will be raised against a system which seems to be too favorable to wretches in revolt against the laws of society. It will be said, "Why give premiums to criminals, while you give nothing to honest people who are struggling against misery?" These objections will be offered by persons who have never made a special study of penitentiary science, and have never had a near view of prison life. This will be the opinion of the great majority, who will find it quite natural that men, made in the image of God, should be buried alive, or confined in corrupting dens, should there prepare new crimes and new disorders. Such persons will not admit that a criminal who applies himself to labor, in order that he may lead a new life in the future, thereby performs a meritorious action—the action of an honest man—an action which he certainly would not accomplish with the zeal, the sole condition of success, if it had been imposed on him simply as a barren task. With too little reflection, the majority cries out for punishment, always punishment, nothing but punishment. But they forget that punishment alone makes the burden greater, and does not arrest relapses. The majority, therefore, defends the principle of excessive and useless expenditures, since the social security gains nothing by them. The interesting little sheets published in London by the Howard Association, cite the almost incredible fact that the same woman had been arrested at Bristol for the two hundred and fiftieth time. Does the majority desire the repetition and perpetuation of facts like this? Is it so flush of money that it can afford to throw it out at the window, all for the barbarous pleasure of taking vengeance once, and of reserving the right to revenge itself again? Crime, like misery, is a disease. It should be cured, not propagated. Relapses are but falls, which prove that the disease has not been cured, and that the punishment had no reason for its existence, since it only produced a new crime.

We do not address ourselves to the majority, but we call the attention of specialists to the results of the treatment of crime by discipline, instruction, and participation in the earnings.

The house of correction at Moscow has received, as we have seen above, in the course of six years, 1,719 men and 409 women. During the whole of this period it has re-admitted, as recidivists, only eight men and one woman. Of the whole number there was only one person who had been married, and he had not reached the point at which a share in the earnings is allowed in the establishment. It has been remarked that the most zealous of the workmen were those who had families. They labored with intense earnestness to be able to buy a dray-horse, to build a small house, to set up some little business. Later in the history of the institution, we saw a large number who exhibited tokens of intelligence in public positions. They were employed as salesmen of the products of the industries which had been taught them in prison. Many of these liberated prisoners have found excellent places as foremen in factories,

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the ordinary working class in Russia not being distinguished for sobriety or for precision of workmanship.

We cannot forebear citing the following fact: One of our discharged prisoners had made a fortune. He had established the hosiery business in his native city, which, as well as the whole surrounding district, had never seen among them a hosier. Orders rained upon him from all sides. This person passed from misery to affluence. His wife dressed herself in silks; his children attended school. He rented a house for which he payed 500 rubles, or more than a thousand francs, per year. In short, it was riches, consideration, complete regeneration that he had attained. One fine morning he was seen to arrive at Moscow completely robed in velvet. He came to throw himself at the feet of those whom he looked upon as his benefactors. He recounted his successes, but he added, "I am so happy that I fear I shall become intoxicated."

Does not this story demonstrate that the true aim of all education is to form the will? There are many natures, especially in certain nations, in which the will lacks energy. This defect of organization can be supplied only by creating an artificial will by the force of habit. On the other hand, everything which is obligatory instantly awakens the desire of revolt and disobedience. The great difficulty in reformatory prison discipline is to attain the end without weakening or discrediting the means. Nothing, certainly, could be more efficacious than the religious sentiment; but we have always feared to enforce the application of it. We have made obligatory only the presence of the prisoners at public service on the Sabbath at morning and evening prayers, and at grace at the hour of meals. But we have placed in each separate division of the common dormitories an image of Christ for the men, and an image of the Holy Virgin for the women.

Nothing is more touching or more solemn than the moment when absolute silence pervades the prison in the evening. The bolts are drawn on the cells, the prisoners have retired, but through the gratings all, or nearly all, are seen kneeling before the symbol of their worship. They make their prayer, their own prayer, which they do not confound with the ceremonial of the discipline. They are not required to do it. It is a necessity of their conscience, of their habits; and it is precisely because there is no constraint upon them that the habit, contracted in infancy, has become a second nature—perhaps a salutary one. We feel a commiseration for wretches endued with such instincts, and are impelled to ask whether society is not more culpable toward them than they are toward society. We ask ourselves also whether personal conference with the prisoners is more beneficial than hurtful, and we think we are not deceived in affirming that it will be efficacious only when confided to ecclesiastics possessing not only large human sympathies, but also a keen penetration and a great knowledge of the human heart. It cannot be sufficiently kept in view that every prisoner is, naturally, always on his guard, always defiant, always in a state of antagonism to whatever proceeds from the constituted authorities. It is the natural reaction of lost liberty against the power that has taken it away. Give to the prisoner who has a medium or long sentence the means of earning money. That he will comprehend, for money needs no explanation. This is already one form of liberty; but every other measure will awaken ill-will, unless it allows of a comparative freedom. We have made obligatory the presence of the prisoners at the service of Sunday, but we have thought it proper, under the circumstances in which we were placed, to leave it optional with them to attend or not to attend the school, of which religious instruction is made the basis. We have only determined

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in principle that the time spent in school should be counted as time employed in gratuitous labors, which the prisoners avoid as much as possible.

Our experience has convinced us that it is altogether inexpedient to limit the instruction given in prisons to the elementary branches. When once you have made it your aim to wrestle with low instincts, to induce better habits, and to strengthen the power of the will, you cannot too much enlarge the horizon of intelligence. Many prisoners, even in Russia, bring into the prisons a knowledge more or less extended. Is it just to carry their civilization no further? It is a matter of course that there should be no schools in detention prisons, nor in houses of amendment, which, in our opinion, ought to be cellular, and the imprisonment should not exceed a duration of three months; but in correctional, and even penal prisons, it would be highly desirable that progressive pedagogical instruction should, without ceasing, go hand in hand with the skilled and unskilled labors of the establishment. Here the aid of philanthropical societies might be of the greatest utility. We have been able, in this view, to make only timid essays, but we have had the good fortune to find a devoted schoolmaster in the person of Mr. Savenko. We think that the chaplain, who inspires by his noble character a certain reverence, a kind of awe, a principle of salutary authority, ought to be charged only with the religious instruction of the catechism, of sacred history, and the like; but that secular instruction should be confided to one or more professors, who should be toward the prisoners rather friends than judges. It is this which Mr. Savenko has thoroughly comprehended. He has the air of a person who does not know in whose presence he finds himself. He treats his pupils with the most perfect politeness, and his pupils, knowing that they are not obliged to attend his instructions, flock to them with alacrity and eagerness. He has divided them into three categories: the elementary course, the higher course, and the conferences of Sunday. In the elementary course there are 124 pupils; in the higher course, 54. The conferences of Sunday, which relate to history, geography, and, above all, the skilled industries carried on in the establishment, draw nearly all the prisoners sentenced for a considerable time. They question the professor, to the end that they may be sure that they understand his lessons. Never is the least rudeness permitted in their intercourse with him. Mr. Savenko is an intelligent worker, an enthusiast in his vocation. He writes instructive treatises for the prisoners. His books of elementary instruction are remarkable, and enable the pupils to make rapid progress. His Sunday conferences are simple and popular. This man is unostentatiously useful, and we are happy to bear public testimony to his worth.

An attempt has been made to teach choral singing by note, according to the system of Galen-Paris-Chevé. Never, perhaps, has this system produced more surprising results. Persons, unable either to read or write, have become able to read music at first sight. Instruction, however, was confined to the forms and names of the first seven notes, which were learned in a single lesson. Unhappily, the course was suspended for want of professors. We cannot too earnestly recommend instruction in music for the inmates of correctional and penal prisons. Beyond the fact that singing is a part of worship, there is in it a reformatory and tranquillizing principle, which paralyzes the instincts of debauchery, hatred, and rebellion. It is an error to suppose that a residence in a spacious, well-aired, well-kept establishment, affording, besides, high wages, with freedom from all care as regards life's neces-

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sities, and offering gratuitous progressive instruction, not even omitting music, becomes a paradise which would awaken the desire to commit a crime simply to enjoy the benefits of incarceration. We have encountered in six years eighteen attempts to escape. We are compelled unceasingly to keep up the most active vigilance against incendiaries who would burn the establishment. There have been registered, within these same six years, one hundred and twenty-two cases of disciplinary punishment. Of this number, seventy-nine cases, nearly two-thirds, belong to the years 1869 and 1870; that is to say, the period in which the inflexibility of the discipline was definitively established. The prohibition against receiving alms from without, which still defray in Russia the expense of drunkenness; against peculations in the prisons; against going out with an attendant, either to visit the confessional or for any labors whatever; against receiving visits except in a grated conversation-room; the enforcement of separation and silence by night; pitiless labor during ten hours of the day, (each minute regulated by the tick of the clock;) a scrupulous cleanliness maintained, by the dread of fines, military discipline, a monastic diet, punishment always present, always executed, always inflexible, down to the day of liberation—all this must provoke the most vivid dissatisfaction. Many of the prisoners spoke with delight of those fetid dens in which they swarmed together in numerous apartments. There they were suffocated with foul air; they had no labor, no gain to expect, no useful instructions, no care for the future; but they had liberty of low debauchery. They related histories to one another, they formed copartnerships for thieving while drinking brandy and playing at cards or dice. They even enacted comedies, as shown in a programme which we have actually had in our hands. All that debauchery can offer that is most foul, all that crime can present that is most hideous, is taught in these vulgar haunts. There is found what those moralists who cry out against solicitude in regard to penitentiary reforms desire to perpetuate, without giving much thought to the matter. They do not at all comprehend that it is only by measures strictly penitentiary that real punishment is accomplished, that the liberty of doing evil is paralyzed, and that the society which does not accept the Christian duty of turning a feeble man from the path of crime only pushes him further on it, and is as guilty as himself. We expected an open revolt; but nothing of the kind occurred. Those who were most exasperated dared not assail the life of their chiefs, as is often the case in prisons given up to idleness. We attribute this fact to the good sense of the mass, and especially to the money gained by their labor. The discipline alone, without the alleviation afforded by the expectation of a better lot, would, undoubtedly, have led to the gravest disorders. It was remarked by us that the most turbulent prisoners were found among the shoemakers, among the tailors, and, in general, among the artisans who work near each other, while the weavers, who are separated from their comrades by noise and distance, have a far more tractable character.

Man clings, above all, to life. The privation of life is, therefore, the greatest punishment that can be imposed upon him. But the punishment ceases at the moment of its execution. Next to life, man's most precious treasure is liberty. Privation of liberty is a punishment all the more terrible in that it does not cease as soon as inflicted, that it is always intense, always present, and that it would be intolerable if hope, that benefactor of man, did not come to his support. It is not necessary to suppose that the putting of criminals inside the walls of a great edifice constitutes the absolute essence

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of the privation of liberty. Nothing could be less exact. The privation of liberty does not consist in the mere place of abode, but rather in the constraint put upon a man during all the hours of the day and night. It is only then that the punishment weighs like an iron ball. We have seen, in many prisons, the semblance of the privation of liberty, but not the real privation. Where the prisoners sleep in common dormitories, where labor is not systematically organized, where the discipline cannot, therefore, be rigidly maintained, where the building is not adapted to the special aim of punishment—there are there always intervals of relative liberty, which paralyze the action of justice. It has happened to us many times to exhibit the correctional prison of Moscow to visitors. At sight of the long range of dormitories, of their walls stuccoed and washed in colors, of the cells painted with oil, of the floors covered with rope matting, of the church, of the refectory, of the storerooms, of the flower-gardens, of the court, of the workshops, presenting a scene of animation like a great manufactory, they cried out, "This is not a prison; it is the land of promise; a crime would be committed to get here." A man came—a man of mark. He looked about him and said, "This is very severe; this must be extremely painful to them." He had comprehended the case. In truth, nothing is more painful than to be always in a state of constraint, like the machinery which moves a clock. "Rise, dress yourself; clean your cell, make your bed; the keepers are waiting; the companies are forming; forward, march. It is the time of making the toilet; if you are not clean you will be punished; forward, march. You will eat bread if you do not become a master-workman, and if you have not the means of drinking tea with your comrades. The clock strikes again. Forward, march. To the workshops, each in his place; to the kitchen-garden, every one in his place; the monitor, the overseers, the elders, the sentinels, are at their posts. No conversations, no songs, no rest. Work, without reward, or strive to earn money for your future. That is your affair. You will work none the less. Don't depart from the regulations. If you do, a fine or the dungeon."

And in the prison, as is generally the case in a reformatory discipline, the punishment must be severe, for punishments which are not so, and especially in prison, irritate. Severity alone inspires awe. Work is finished. "Forward, march, to the refectory. You will have meat only on Sundays and festival days. Halt a moment. Forward, march, to work;" and so on to the moment in which the last company enters its dormitory, where silence reigns, and where one would hear the motion of a fly's wing. This constant pressure of the discipline throughout the duration of the imprisonment would end in making the prisoner mad, if it were not balanced by an anticipation of the time when the punishment, once undergone, will no longer have any reason to exist. All constraint is essentially hateful, and it is for this reason that our judgment is in favor of admitting a certain degree of liberty in whatever may be advantageous to the future of the prisoners. We believe it necessary to give freedom of choice between gratuitous and waged labor; freedom in the selection of trades; permission to go or not to go to school, or to the Sunday conferences; liberty to read or not to read. One does really well only what one does of his own will.

We think it proper to add some words regarding the sanitary results of the experiment made at Moscow. There were recorded in six years 27 deaths out of 2,128 prisoners, about 4 per cent. This number is considerable, but it is explained by the fact that the greater part of the persons brought to the prisons are already enfeebled by debauchery.

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Some of the diseases that have been cured have had perhaps their cause in a too restricted dietary, insufficient for men in the flower of their age. We are not permitted to go beyond the existing laws on this subject, but it appears to us that a more substantial diet would be desirable.

Such, in brief, are the statistics which we have thought proper to add to our memoir upon the prison question in Russia, as published in the report of the New York Prison Association. We were far from expecting that that memoir would cause any sensation, or that it would procure for us the distinguished honor of a correspondence with eminent specialists and the flattering privilege of being enrolled as a member of philanthropical societies of high repute.

Among the ideas which our conscience has constrained us to put forth—that which has enlisted universal sympathy—is the proposition to call an international congress to establish definitively the laws of an improved penitentiary discipline. This proposition, however, was but the natural sequence of pre-existing facts. The secretary of the Prison Association of New York had already addressed himself to different governments, with the view of collecting information concerning the modes of prison administration of all countries. This collection of materials should evidently be only a preface. The materials necessitated a critical examination, the critical examination a conclusion, and the conclusion demanded publicity. The task undertaken by the association of New York involved, necessarily, the international congress. We cannot sufficiently testify our gratitude to the respectable secretary of the association, Mr. Wines, for the energy with which he has pushed the preliminaries of the greatest movement for reform of which the prison question has ever been the occasion. Within a period of less than three years, propositions to this effect were sent to all the civilized points of the globe, and received unanimous adhesions. A preliminary congress, held in October, 1870, at Cincinnati, declared itself on thirty-seven questions, founded the national association of the United States, and laid down definitive rules for the international congress fixed at London for the month of July, 1872. Mr. Wines, clothed with an official character, came to Europe to confer with the different governments and with specialists of highest renown.

Penitentiary science, then, thanks to the indefatigable activity of Mr. Wines, is about to enter upon a new phase. The congress, accepted everywhere, becomes an event of the highest importance. This importance, nevertheless, depends on the direction which shall be given to the conferences, and on the conclusions which shall be reached.

Mr. Wines is devoting himself to this question as well as to all the others connected with the congress. In the midst of his immense correspondence and of his numerous voyages, he has found time to prepare a series of questions addressed to the different governments, relating to the prisons and prison administrations of their several countries.

This series of questions continues the work commenced, and seeks to complete the documents and statistical *data* on what concerns the prisons of all countries. The idea of Mr. Wines, without doubt, is that it will belong to the congress to declare itself as to what ought to be determined upon as definitive axioms in relation to penitentiary science. It is this manifesto of science which we invoke with all our heart.

Every country has its exigencies, its traditions, its habits, its routine. Every country has its vestiges of barbarism, living ruins of an ancient order of things; but these ruins have not yet been transformed into symmetrical edifices. The troubles of war and the labors of peace have left them still extant, perhaps from want of time, perhaps

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from lack of means; perhaps, also, a little through indifference. There is no country which can boast of being able to serve as a model in its penal legislation. There is no country which does not feel the pressing need of important modifications in this regard. But we do not suppose that all these sincere confessions, these tardy acknowledgments of national shortcomings, can take the place of, or be an equivalent for, a congress. There is no government, however civilized it may be, which can feel complacency in appearing before such a tribunal to enumerate its faults. Matters of this kind can only be talked of, so to speak, in the family at home. We must acknowledge that when we received the invitation to prepare for America a memoir on the state of the prisons in Russia we were singularly embarrassed. We well knew that, on the one side, it was disloyal to disguise the truth, but that, on the other, it was cruel to lay bare before foreigners the bleeding wounds of one's own country. We therefore determined to speak the truth only in some words; to glide over it, as it were; but to extend our remarks upon the essays that had been confided to us in view of the future. There resulted from this a misunderstanding, for the essay was taken for the exhibition of a complete system already existing; and special sheets, published in England, in America, in Italy, praise the organization of the Russian prisons; a representation which was, unhappily, premature.

There is, it seems to us, another rock still to be avoided by the congress—that of falling into questions of detail. Every country having its exigencies and its peculiarities, it will be very difficult to separate great humanitarian considerations from those of a local character.

The direction of the debates, the choice of the principles to be definitively established in the name of science, render necessary, as we think, some preliminary understanding, some preparatory labors. We look upon the congress as a tribunal which will have to pronounce judgment, after having heard the pleadings of the advocates, but will not have the time to study the questions and to make *résumés* of general statistics. It should direct its attention not so much to what has been or what is, as to what ought to be. Our opinion is, that the different governments should send to the congress not official representatives, which might embarrass them, but unofficial ones, who might take part in the debates, without making the conclusions of the congress rigorously binding upon the countries of which they might be the delegates. Such is also the opinion of the English government. An official international congress could be, it seems to us, only political. The congress of London ought to be an affair quite different from this, if it would be generally recognized as useful. It should be, no doubt, supported, patronized, and its expenses shared by all the powers; but it ought to guard its special character, so as to avoid all embarrassment in the debates, and everything that looks like binding the administrations which are represented in it. It is only after the close of the congress that each government will be able, on the report of its delegation, to determine what it will accept and what reforms it will undertake.

The form of the questions framed by Mr. Wines seems to us particularly happy as a basis of preliminary labors in view of the congress. We also take leave to submit a series of questions, which we offer to the examination of the students of penitentiary science.

Our opinion is that collective reformation is more important than individual reformation; that detention prisons ought to be connected with the centers of preliminary proceedings, and with the judicial tribunals, and should be governed by special regulations; that prisons for punishment

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can be of only three classes, and must be determined by the duration of the imprisonment; that the same prison ought not to be used for different objects; and that the same object cannot properly be sought in different prisons.

What we would desire above everything is, to establish the system of classification, for upon an exact classification depend the different modes of architecture, of discipline, and of public utility. If the congress does no more than fix the fundamental boundaries of the classes of prisons and the functions which each class is to perform, it will, by so doing, have rendered an immense service to humanity.

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2. Questions proposed by Count Sollohub in view of the approaching International Penitentiary Congress.

1. Do you consider it the aim of the congress to secure, among civilized nations, a unanimous judgment on the most desirable legislative and administrative plan for the general management of prisons?

2. To avoid the loss of precious time, do you not think it desirable that the congress engage neither in abstract discussions nor in studies relating to what is peculiar to each several country, but that it seek to come to an understanding on fundamental principles, on practical axioms, which every civilized state should henceforth have in view in the managements of its prisons?

3. Do you not think that these axioms should be divided into—

(*a*) General principles applicable to all countries;

(*b*) Local considerations necessitating exceptional measures?

4. In determining principles, do you not consider it necessary to avoid confounding questions of detail with general questions, so as to avoid confusion in the discussions?

5. Do you not think that general questions are summarily comprehended in the principles of classification and organization, and questions of detail in the principles of discipline and practice suited to the different aims which they should have in view?

6. Do you think it proper that the congress decline all discussion of the death penalty, as having no connection with its special aim?

7. Do you judge it proper that the congress decline all discussion on political rights, social order, bail, fines, &c., it being impossible to treat these matters thoroughly in a first meeting?

8. Ought not the congress to recognize from the start, as a binding principle, the fundamental proposition of Rossi's Treatise on the Penal Code: "*Imprisonment is punishment, par excellence, among all civilized people?*"

9. Should not the congress add to this the following declaration: "*Preliminary imprisonment is a necessary evil, imposed from considerations of social security?*"

10. Should not the general principles, applicable to all countries, lead to the following declarations:

(*a*) All imprisonment ought to have a special aim, and that strictly determined;

(*b*) The same prison cannot serve different ends;

(*c*) Prisons of different kinds cannot serve the same end?

11. This being admitted, do you think that all the prisons of a civilized country must belong to one of the four well-marked follow-

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ing forms: (*a*) detention, (*b*) amendment, (*c*) correction, (*d*) punishment?

12. Do you think that detention prisons (*maisons préventives*) should be made the object of special solicitude, and that prisoners awaiting trial (*détenus préventifs*) ought not to be subjected to the humiliations and servitudes which should be applied only to persons found guilty by the courts?

13. Are you of opinion that the theory of detention of prisons ought to be made the object of special deliberations and categorical decisions on the part of the congress? Will you not give special thought to this subject, which, as being the most difficult point in penitentiary science, requires the convergence of all the lights that can be directed toward it?

14. Do you think it absolutely necessary to fix a definite minimum period for the custody of arrested persons prior to their transfer to the detention prison?

15. What would this period be in principle, apart from local considerations?

16. Do you think it indispensable that the examinations be continued subsequently to those of a preliminary character, within the precincts of the detention prison itself, and that, in this view, there be established in all these prisons offices of committing magistrates and of deputy attorneys general?

17. Do you think it necessary to establish strict regulations touching the proceedings of committing magistrates, with a view to shortening as much as possible the period of preliminary imprisonment?

18. Are you of opinion that detention prisons should be adjacent to the court-rooms, (*palais de justice,*) so as to spare the prisoners needless humiliation and loss of time, and save to the administration the expense of carriage-hire and police escort?

19. Would you be able to suggest any means to accelerate the progress of justice?

20. What in your opinion are the best styles of architecture and modes of discipline for detention prisons?

21. Do you not think that a uniform rule for all prisoners awaiting trial would lead to needless vexations, and that we might properly recognize three classes of this sort of prisoners:

(*a*) Those who should be in complete isolation;

(*b*) Those who should be subjected to certain restraints;

(*c*) Those who might properly enjoy comparative liberty?

22. Do you not regard as equitable the following principles:

Every prisoner awaiting trial has the right—

(*a*) To an apartment for himself individually;

(*b*) To the preservation of his clothing and his ordinary modes of life as far as possible;

(*c*) To purchase for himself better food than the customary fare of the prison;

(*d*) To smoke, read, and occupy himself in manual labors without being subject to a detention of his earnings;

(*e*) To receive visits authorized by the committing magistrate;

(*f*) To exercise in the open air, except in cases of absolute isolation, where cellular yards should be provided;

(*g*) To be free from every privation, every humiliation, every inconvenience, other than those required by the order of the prison and the necessities of the preliminary proceedings?

23. Do you not think that, nevertheless, it would be useful to neutral-

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ize the evil influences which the prisoners might have on one another? What would you propose to be the best means to this end?

24. Will you please trace the normal plan for a prison construction, uniting the several localities requisite for trial, preliminary proceedings, and detention?

25. Do you think it necessary to establish separate detention prisons for the two sexes, or may such prisons consist of two separate sections in the same establishment?

26. What would be the maximum number of prisoners that might properly be confined in a detention prison?

27. What are the special exigencies of the country or city in which you happen to reside for the improvement of detention prisons?

28. What would be the proper discipline to be introduced for the maintenance of order in the establishment without being irritating to the prisoners?

29. Are you of opinion that it is not logical to admit into the codes only two degrees of guilt, when there are three?

30. Do you not think it necessary to treat this subject in the congress in a manner very exact? Does not it appear to you that confusion in prison discipline has proceeded from confusion in the penal laws, which admit two forms of guilt, *misdemeanor* and *crime*, whereas there are three forms of guilt, corresponding to the three forms of comparison—minimum, medium, and higher—which may be designated as misdemeanor, crime, and felony, (*délit, crime et forfait.*) Would not this classification draw after it the corollary that against each form of guilt there should be established a special system, which should not be confounded with the others? The system for misdemeanors would take for its aim amendment; for crimes, correction; for felonies, punishment.

31. Do you not think it of great importance to ordain that each dégree of penal imprisonment, answering to a particular aim, be rigidly determined by the minimum and maximum of the duration of detention, so that the classification of prisons shall be controlled by the continuance of the imprisonment?

32. Do you consider it necessary that all existing penal prisons be modified in this sense, and that all those which are not conformed to the above classification be regarded as abnormal?

33. Do you accept as logical the following propositions:

(*a*) The house of amendment has for its aim to inflict on the prisoner a salutary terror, to arrest him at the moment in which he is entering upon an evil course, and to withdraw him from the bad influences to which he might be subjected as well outside of the prison as among his prison comrades.

(*b*) The house of correction has for its aim to give to the prisoner a new education, and to prepare him for a return to society under conditions which would render his return safe. In this view, the correctional system should use its best efforts to the end that the prisoner on his liberation may carry with him a capital of good habits, a capital of newly acquired knowledge, and, above all, a capital of money, without which the other two might remain inefficacious. This capital would be acquired under the form of wages, agreeably to principles to be hereafter explained.

(*c*) The convict prison (*maison de force*) or galley (*bagne*) has for its aim to positively cut off from society its members, recognized as unworthy to re-enter it, to the end that they may serve as an example, and to protect the general safety. The galleys must not, in any case, be confounded with deportation. Distant or near, they ought to con-

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tain individually convicted criminals, and to release them only at the end of the sentence fixed by the laws for their imprisonment.

(*d*) The system for the convicts would be the same as for the correctionals, but the discipline more severe. The money gained as wages would not be given unconditionally to the liberated convicts as to the liberated correctionals, but would be applied to a system of colonization, based on capital, landed property, and family, the only principles which can assure the future of a colony. The place chosen for colonization would depend upon the topographical conditions of each country.

(*e*) The architecture and discipline of each class of penal prisons would be determined by special considerations?

34. The houses of amendment having for their object to inspire delinquents with a salutary terror, thereby leading them to avoid pernicious influences, ought they not to be rigidly cellular, although for short imprisonments?

35. Do you not think that it would be useful to discuss at the congress the following motion:

The congress declares that cellular imprisonment is to be recommended only in the following cases:

First. For short sentences in the houses of amendment.

Second. As a disciplinary punishment in the houses of correction and convict prisons.

Third. It would be desirable that all existing cellular prisons be reorganized in this sense.

36. Do you not think that the duration of detention in the cellular prisons of amendment ought not to exceed three months, a term sufficient for the end proposed, while a longer captivity might offer serious inconveniences?

37. Would you not think it necessary to propose to all governments adopting the cellular system for houses of amendment, to eliminate from their legislation all penal detentions from three months to a year, on the ground that that period would be too prolonged for repressive and too short for correctional action?

38. Guilt of the first degree being divisible into infractions and delinquencies, (*contraventions et délits*,) do you think it necessary to establish, besides houses of amendment, houses of arrest for persons guilty of the first of these offenses, or do you think it would be sufficient to establish, for this purpose, sections in the houses of amendment, or, in short, do you think that such a distinction would be useless, and that a slight degree of culpability should only draw after it a minimum term of detention in the house of amendment?

39. Admitting that the houses of correction should have for their object the regeneration of the prisoner, do you think it wise to enact that no one shall be detained in a house of correction less than one year or more than five years, and that the penal laws should be modified to conform to this principle?

40. Do you think that every penal detention should have in view, above all, the time of the prisoner's liberation, and that the entire discipline of prisons should be organized with a view to prevent relapses? If by short imprisonments it is important to give an energetic notice so as to hinder the propagation of evil, is it not important by means of sentences of a longer duration to prepare, in a manner more sustained and efficacious, the correctional prisoner for his re-entrance into society?

41. Does it not appear just that every penal imprisonment should be executed rigorously and without the least feebleness, but that the epoch at which the punishment shall end be made the object of a special soli-

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citude? In admitting, to the fullest extent, the utility of moral instruction, it is impossible to deny that this alone is insufficient, where a man finds himself, without defense, exposed to misery, scorn, and temptation, when the gates of the prison are opened for his egress. Is not, then, what follows the prison more grave than the imprisonment itself, and is it not true that in nearly all cases of relapse, the cause is found rather in the prisons than in the recidivists? Is it not the object of correctional detention, while maintaining the rigor of the punishment, to impart to the liberated correctional the means of earning a livelihood, and to afford him the opportunity of laying by such a portion of his earnings as will be sufficient for the new struggles which he is about to encounter?

42. Is it not at the same time highly useful to point out without ceasing to the prisoner the end which he may gain, to arouse in him a regenerative aspiration, to enable him to gain a constant victory over himself, and thereby to accomplish his complete reformation?

43. Inasmuch as labor affords a constant occupation to the mind, and constitutes besides the sole source of income possible to prisoners, do you not think that the theory of prison labor ought to be made an object of special attention by the Congress?

44. Do you think it would be an error to confound under one general signification the three forms of labor which may serve either as punishment, or as a mechanical occupation, or as a means of regeneration?

45. Are you not of the opinion that this third form of labor should be liberally remunerated in order to form a *peculium* for the prisoner, since this must serve as a safeguard to him after his liberation?

46. Do you regard as equitable the following regulations respecting correctional prisoners:

(*a*) Every prisoner, received into a correctional prison, is under obligation to work without remuneration, ten hours a day, at rough manual labors, the product of which belongs to the administration.

(*b*) Every prisoner has the right, if he so elect, to redeem himself in part from labor unproductive as regards himself, and to be subjected to the rough occupations only four hours a day; if he express the desire to pass to mechanical occupations, the product of which shall be divided in the following manner—one-third for the laborer, two-thirds for the administration.

(*c*) If the prisoner manifests the desire to learn a trade, he is subjected only two hours a day to the rough work, but receives no wages so long as he remains an apprentice. On becoming a master-workman, he receives two-thirds of his earnings for himself, and the administration only one-third.

(*d*) The prisoner who is already master of a trade at the time of his incarceration receives but a moiety of his wages; the other moiety goes to the administration.

(*e*) No prisoner has the right to touch his money before the day of his liberation.

(*f*) Every prisoner has his little book, in which is inscribed, each week, the sum that he has earned by his labor.

(*g*) The money of the prisoners is placed in a particular case, inclosed within the strong box of the establishment, but the key of the case is in the hands of a cashier, whom the prisoners choose from among themselves, and who is always present when the money is deposited in the case, and when it is paid out to the prisoners.

(*h*) The trades taught to the prisoners should be simple and not requiring any great expenditure of funds, such as tailors, shoemakers, hosiers,

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book-binders, weavers, &c. The trade should be taught as a whole, and not in part.

(*i*) The wages should be distributed in such manner that the same degree of application would secure the same benefit.

(*j*) The infraction of a disciplinary regulation should involve a fine, to be deducted from the *peculium* of the workman.

(*k*) The prisoners should have the right to establish their own tribunal, whose acts must be ratified by the director of the establishment.

(*l*) The *cantine* should be rigorously prohibited.

(*m*) If the customary rations of the prison are not sufficient for the support of the prisoners, a fourth part of the wages might be devoted to the expense of a more substantial nutriment, but only on the request of the prisoners themselves, and under their inspection. The purchases for this purpose should, nevertheless, be confided to the overseer of the establishment. It is a matter of course that only master-workmen should be permitted to enjoy this privilege.

(*n*) The superintendence of the work should be in the hands either of the authorities of the prison or of manufacturers by profession; but no contractor should be in charge of several branches of business at once?

47. Might not the congress resolve that in countries which offer vast productive forces and few arms, the labor of prisoners cannot be too much encouraged as an auxiliary to private industry; but that where population exceeds the productive forces, it is impossible not to recognize the possibility of competition between prison labor and free labor?

48. What would be your opinion in this last case? How could the injustice be avoided that would be done to the free and honest laborer in favor of the criminal, whose crime would thus become a title to public assistance?

49. Do you not think that this question ought specially to engage the solicitude of the congress?

50. Since the principle of reformation should effect a reconciliation of the prisoner with himself, are you of opinion that the cellular system and the law of silence can only lead to a result diametrically contrary to that which is proposed? It would then be rational to prevent the irritation occasioned by both systems by replacing the cells with separation at night in common dormitories, and the law of silence with a discipline by day which would prevent dangerous conversations, cabals, or even orgies. The regulations for the night should require that all the dormitories be lighted, that attendants circulate through them, and that silence be enforced in them in order not to disturb the sleep of the prisoners—an arrangement which in no case could be regarded as a cause of irritation. The discipline of the day should require a triple *surveillance*, viz: on the part of the overseer of the shop, the regular monitor, and an old man chosen by the prisoners themselves from among his comrades.

51. The rations of the prisoners being fixed by law, do you not think that the prisoners ought to have delegates, whose duty it would be to be present at the reception of the provisions, and even to be responsible for their good quality?

52. Do you think it would be unwise to confine the education of prisoners to the mere elements of learning, and that it would be desirable to establish in correctional prisons two courses of instruction—one for beginners, the other for prisoners who already possess knowledge of a higher order? Do you not think it also indispensable that men specially qualified give to the prisoners, every Sunday, lectures on scientific subjects, having relation to history, geography, chemistry, physics,

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the natural sciences, and, in general, to everything that can enlarge the intellectual horizon of persons who are rather ignorant than guilty?

53. Do you not think that prison libraries ought to be the object of special solicitude on the part of the congress, and that it would be desirable that the congress offer a premium for the best work which might be written for the use of prisoners?

54. Since the congress will contain representatives of different religions, do you not think that it should content itself with resolving that religious instruction ought to be made obligatory in every prison, without enlarging on the mode and nature of such instruction?

55. Do you not think that to establish order in a prison, it is indispensable to pay special attention to its architectural arrangements? Do you accept as desirable the following principles:

(*a*) Every correctional prison should have a large kitchen-garden to serve as the base of a system of labor, being made at once a branch of revenue for the administration and a center of unremunerated manual labor;

(*b*) No one, except the director and the chief keeper, should have lodgings within the prison itself;

(*c*) There should be a special court outside of the prison to contain the residences of the chaplain, the surgeon, the assistant surgeon, the schoolmaster, the midwife, (for female prisons, which should be central, like those of the men, but established at a distance, although under the same administration,) the monitors, and the keepers. This court of service should contain also the magazines of provisions, the stables, the garden-tools, &c. The overseers of the prison should go there only to discharge the duties of their service, and, beyond the time of their service laid down by the regulations, should not have the right to remain there;

(*d*) The hours of rising and retiring, of labor and rest, should be announced by the bells of the establishment;

(*e*) The building of the correctional prison should be divided into three courts, in the following manner:

First court. Wicket, guard-house, chancery, kitchens, laundry, storerooms for the effects of prisoners. The main building, facing the court of entrance on one side and the second court on the other, should contain the residences of the director and the chief-keeper, and the apartment where prisoners are allowed to see their friends.

Second court. Chapel, refectory, store-room for clothing furnished by the administration, school and library, dungeons, dormitories.

Third court. Workshops for trades.

N. B.—The hospital and baths should be placed in the kitchen-garden, to avoid the danger of contagion and fire, but within the general inclosure of the establishment, which should be marked by a deep fosse, and, if necessary, by a wall. The prison for females should be established near by; its bases should be the same as that for the men; but the wash-house should there replace agricultural labors.

56. What would be your objections to this plan?

57. Do you not think that the utmost cleanliness ought to be maintained in an establishment of this kind, and that cleanliness has also its reformatory side?

58. Do you not think that military discipline in an establishment of this kind would be too rigorous?

59. Do you not think it desirable to offer an international premium to the architect who shall furnish the best plan for a house of correction?

60. Do you not think it highly desirable that the congress offer an in-

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ternational premium to the engineer who shall propose the best system for the ventilation and the water-closet (*lieu d'aisance*) of prisons? Cheapness should be one of the absolute conditions of this premium.

61. In general, are you not of opinion that cheapness in the construction of prisons ought to be a constant aim of penitentiary science, and that establishments requiring large expenditures of funds deform the action of justice by applying it only to privileged prisons, to the detriment of the great principle of equality, which ought to make men equal even in the presence of punishment and the benefits which may come in its train?

62. Do you not think that houses of correction, as they ought to be central, should contain not more than six hundred inmates?

63. Is it not your judgment that the congress ought to occupy itself specially with the question of legislation for young criminals? Do you not think that short and medium terms of imprisonment ought to be avoided, but that society, on assuming the charge of a minor who may have committed a crime, should be bound to charge itself with his entire education to the day of his majority?

64. Would not the system of the agricultural colony, in the vicinity of a model farm, be the best means to this end, as an agency both of instruction and of profit? What are your views upon this subject as regards the country of which you are a citizen?

65. Do you think that deportation, pure and simple, without regard to the time passed in the convict prison, and without the principles of a rational colonization, can be of any utility whatever? If such is your judgment, are you not of opinion that the congress might make the following declaration: The deportation which should only cause criminals to be transported from one place to another would but shift the danger of impunity, and therefore would have no reason for its existence.

66. Do you not think that we should be careful not to confound exile for political causes with deportation inflicted for crimes, since exile is but a banishment with liberty of locomotion, while deportation should be admitted only with the clause requiring the convicts to undergo the punishment which they may have deserved, affording them, however, at a later period, the opportunity of colonizing by means of the money which they should have been able to lay up during their imprisonment?

67. Do you not think that the Irish system might be applied, wholly or in part, to the management of convict prisons in other countries?

68. Do you think that the galley-slaves might be admitted to a participation in their earnings from the moment of their entrance into the bagnio, or should they remain a certain time without the right to any remuneration whatever in order to increase the severity of their punishment?

69. Do you not think that the disciplinary severity of the bagnios ought to admit—

(*a*) That separation by night should be effected in little cells of brick or stone;

(*b*) That the prisoners be compelled to wear chains during a certain time, and that they be permitted to lay them aside only after the time prescribed, and not even then unless they should have deserved such indulgence by their conduct and their application;

(*c*) That for a violation of discipline they be subjected to corporal punishment, which could not be tolerated in any other class of prisons?

70. Do you not think that the bagnios should be placed near the localities in which the criminal acts have been committed, in order to avoid the useless expense of transportation, and to serve as a continual

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example in sight of the people; and that the establishment of bagnios in distant colonies is admissible only when the topographical conditions of a country show a too great agglomeration of inhabitants in view of a marked insufficiency of the productive forces of that country?

71. The want of money being always the great objection which is urged against the establishment of a complete system of rational prisons, do you not think that the financial problem relating to this important branch of the administration of each country would find its solution in the following proposition:

(*a*) The houses of detention, connected with the centers of preliminary proceedings and of judicial sentences, should be established and maintained at the expense of the municipalities, as having relation to the civic rights of the citizens whom justice has not yet declared guilty, and for that reason having a right to the protection of their fellow-citizens;

(*b*) The houses of amendment (cellular, from one day to three months) should be established and maintained at the expense of the state;

(*c*) The houses of correction (separation by night, labor stimulated, from one year to five) should be established by the aid of a loan reimbursable from the product of the labor of the prisoners. The maintenance of the correctionals would devolve upon the state until the formation of capital funds, which the prisons of this category would have to provide;

(*d*) The convict prisons or bagnios, with sentences from five years to life, remissible conditionally, should be established by joint stock companies, as great enterprises are set on foot, or by the state in a similar manner. The formation of an obligatory capital, realizable only by the participation of the prisoners in the profits of the enterprise in view of their colonization, should take for their base the principles proposed for the correctional prisons?

72. Are you not of the opinion that the ideas above set forth might be made the object of the special attention of the congress? Do you think that questions of colonization, being outside of what relates specially to prisons, could not be properly debated by the congress?

73. On the other hand, do you think that the question of prison administration ought to be the object of an unanimous judgment?

74. Do you think that every prison, in order to maintain all the rigors of discipline, ought to be conducted on a war footing, like a regiment in service or a vessel in commission?

75. Do you think that the prisons of a country ought to depend on the ministry of the interior or on the ministry of justice, or that the detention prisons alone ought to depend on the ministry of justice, and the others on the ministry of the interior?

76. Do you not think that the topographical features of the different countries should have an influence on the mode of administration of their prisons; that a country of little extent may centralize the inspection of its prisons, while countries covering vast territorial regions must parcel out the inspections, yet uniting them in a general administrative focus?

77. Do you not think that since the immediate directors of certain prisons are called upon to exercise rights of great importance, and to accept obligations no less grave, it would be essential to raise the dignity of directors of the central prisons? The houses of preliminary detention and amendment might be confided to officers of a scrupulous probity, but the houses of correction and the bagnios ought evidently to be intrusted only to men of a high civilization, whom it would be

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unnecessary to subject to the complications of a too minute administrative machinery. Should they not be subjected simply to an inspector general, who, on his part, would be obliged to have recourse to the central administration placed in charge of the prisons?

78. Do you not think that the directors of the great prisons should be chosen from among the officers of the prisons of a lower order, and that the inspectors, whether of *arrondissement* or general, according to the necessity of different countries, should be chosen from among the directors of the preat prisons? Might not this order of things create a new specialty of administration, the absence of which is now widely felt?

79. Do you not think that the assistance of philanthropic prison societies might be of an indisputable utility, but that it would be desirable that the congress sanction the following proposition, enunciated in one of the works of Mr. Charles Lucas: "The action of philanthropic societies begins where that of the administration ends?"

80. Should not philanthropic societies take for the object of their efforts—

(*a*) The establishment and embellishment of prison chapels;

(*b*) Aid to their schools and libraries;

(*c*) The moral instruction of the prisoners by ecclesiastics chosen for this end;

(*d*) The establishment of asylums for the children of prisoners;

(*e*) The guardianship of liberated prisoners;

(*f*) The observations and propositions for ameliorations which they should have the right of proposing to the authorities?

IX.—THE GERMAN EMPIRE.

[In the latter part of February, or early in March, a letter was received from Herr Steinmann, counselor in the ministry of the interior, who is specially concerned with penal affairs, and to whom the preparation of the report for Germany was assigned by the minister, in which he said that the report had been completed, and would be forwarded in a few days. Its arrival has been vainly expected to the present time, (May 15,) when this report is placed in the hands of the printer. It is feared that the failure is due to some mischance in the mails. Whatever may have been the cause, (whether this or some other,) the non-reception of the document is deeply regretted, and must be felt by all as a serious loss to science.]

B.—ALEXANDER MACONOCHIE AND HIS PRINCIPLES OF PRISON DISCIPLINE.

No one familiar with the literature of penology can have failed to recognize in Alexander Maconochie one of the profoundest thinkers and most vigorous writers on that subject the world has ever seen. His writings are marked by a fullness of knowledge, a clearness of thought and expression, and a force of reasoning, united to a love of truth and a spirit of candor, which render them as charming as they are instructive. Yet he produced no good book, nor did he develop, in any single

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publication, his whole system of prison organization and prison management. He was pre-eminently a pamphleteer; and his works, which are numerous, consist rather of tractates, dashed off on special occasions and for particular purposes, than complete and exhaustive treatises, evolved through a process of long and patient thought, continued through months and years of solitary study. For this reason he continually repeats himself; and it is not even uncommon with him to give the same title to different publications. I have, therefore, thought that it would be a useful service to those who are devoted to studies of this nature, to the greater part of whom, probably, the writings of this author are not accessible, and have judged that it would be especially timely, in view of the approaching international penitentiary congress of London, to bring together, under a series of propositions, embodying the essential principles of prison discipline held and advocated by him, the substance of what he has published on this subject. In doing this, I shall sometimes condense what he has writen, and, at others, make use of his own language unchanged, but without the formality of quotation marks, since, as I make no pretense to originality in this paper, and aim to be simply a faithful mouth-piece to Captain Maconochie, such characters would only serve to disfigure the page.

Without further preface, I proceed to the work in hand, putting in, however, this *caveat;* that while I heartily concur in most of the positions taken by this able and excellent author, as well as successful prison-governor, there are a few of them to which I cannot give an unqualified assent.

I. *In lieu of the customary sentences on conviction for crime, imposed for a fixed time, there should be substituted a specific task, to be computed in marks of approval, given for diligence and good conduct, or if sentences as recorded in court are still imposed for a definite period, they should be commutable, at a fixed valuation, into labor and good conduct.*

The essential principle of the mark system is the substitution of task for time sentences. It proposes that, instead of criminals being sentenced to so many months or years of imprisonment, they be required to earn so many hundred or thousand marks of approval or commendation in the same condition, subject to whatever rules may be otherwise imposed. This change would not benefit the prisoner, as regards the duration of his imprisonment, because to earn a considerable number of marks, or considerable amount of time must be employed, and it would be easy so to adjust the quantity of marks to be earned, that the task sentence, with reasonable diligence and good conduct, should be nearly the measure of the time sentence. But there would be this important difference: that in the one case the reasonable diligence and good conduct are indispensable to the completion of the sentence, and in the other they are not; and there would be this further difference, that the time sentence, being the only thing required, is commonly sought to be whiled away, as far as possible, in idleness, self-indulgence, prurient thought, word, or act, pretended sickness, and the like, and is thus necessarily deteriorating; while, in the other case, the task sentence, by making diligence and good conduct the first object, and thus giving a strong interest in activity, exertion, ingenuity, and perseverance, would be, from necessity, a period of great improvement; and in this sole contrast between the two systems, will be seen, at a glance, the immense superiority of the one over the other.

In administering punishment, we should in every case seek primarily to reform the individual criminal, without directly aiming to make an example of him. For this purpose we ought, while endeavoring to gain

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and direct him, carefully to avoid doing anything calculated to enfeeble him either in body or mind. On the contrary, we should seek, in all possible ways, to invigorate and strengthen him. If this end be judiciously sought; if we endeavor to improve the prisoner, morally and physically, by properly stimulated self-exertion and self-restraint, (the only way in which it can be successfully done,) we shall find that the sight of this process, and the known fact that all convicted persons must pass through it before being again released, will prove more deterrent than anything we now inflict for the special purpose of deterring. In other words, by making reform our first object, and seeking it through properly stimulated industry and self-command, with the necessary moral and religious instruction, we shall find that we both *reform* and *deter;* whereas at present we rather corrupt and incite. Or, in other words still, by making punishment primarily a school of hardy reform, reform through sustained hardy exertion, we shall gain our ends in it; but by making it primarily a school of suffering, with reform a subordinate object, we practically lose them.

As a rule, reform can be attained only through a severe training. It is in a system of (so to speak) well-devised adversity, by a victory over opposing forces, that all the manly virtues are generated, all the manly energies called out. Before a task, to be accomplished as the indispensable condition of release, time becomes valuable. It is sought to be improved, not cheated. A purpose is given to life. Idleness is shunned, industry courted. Prurient and other distracting thoughts are rejected. Evasion brings with it its own punishment, by prolonging detention. Moreover, the impulse to exertion is thus made moral instead of physical; it is internal, not external. This accustoms the prisoner to act for himself, instead of requiring him to be led by others. Above everything, such a training would prepare him to meet subsequent temptation. And the habit of self-command necessarily generated in prison by such a system, would remain after his discharge, almost of itself a compensation for the sacrifices by which it was acquired.

Sentences measured by time convert time into the great enemy of prisoners; and thus, instead of being systematically taught to value it, as the laboring free are compelled to do outside, they are systematically taught to hold it of no account, and to cheat and idle it away by every means in their power. It is impossible to overrate the moral injury thus alone inflicted, which might and would all be avoided by substituting sentences measured by tasks instead. Indolence, evasion of labor, and habitual pruriency of thought, act, and language, are among the direct results of time sentences; whereas the result of task sentences would be industry, active effort, a healthy influx of new thoughts and motives, and a toning up, strengthening, and general improvement of the character.

Long fixed sentences are always morally injurious by leading criminals to accommodate themselves to existing circumstances of whatever kind, while they undervalue and neglect distant prospects. This evil would be lessened by an accompanying task, measured, as proposed, by marks; for then, from the very start, they would, by their exertions, their idleness, or their contumacy, be sensibly advancing or receding, day by day, toward or from the anticipated discharge, and would thus have constantly before them a motive to activity and self-denial. Nevertheless, a very distant minimum will ever be found to damp their zeal, and be otherwise disadvantageous. On the other hand, the task, while fairly proportioned to the accompanying time sentence, should be made rather hard, never easily to be performed in the whole minimum time

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assigned with it, and impossible to be done in less. In any case, advance toward it, with good conduct, will always be certain; with industry and economy, it may even be rapid, and the character must improve with every step. This constant approach to liberty, through the prisoner's accumulation of marks over and above both expenditure and forfeiture, is the key-stone of the arch. Apart from executive pardon, nothing should release a criminal once under bondage, except the literal fulfillment of his task; nor, when this is done and his minimum time served out, should anything short of a new charge retain him. The excessive applications for pardon now made, too often on false grounds, yet also too often listened to, give excessive trouble to the executive, while the hopes and systematic misrepresentations which they suggest among prisoners also do them much mischief. At present, when punishment is known to be almost universally deteriorating, it is hard to resist these applications; but when it shall come to be known as universally improving, this reason for leniently considering individual petitions will be at an end.

II. *The prisoner's destiny, during his incarceration, should be placed, measurably, in his own hands; he must be put into circumstances where he will be able, through his own efforts, to continually better his condition.*

One of the gravest errors in the existing system of prison discipline is that it requires only submission and endurance on the part of those subjected to it. No means are offered to prisoners to improve their condition under it, and their minds consequently become, in a short time, stagnant. They accommodate themselves to the position in which they are placed with little feeling of pain, as they would accommodate themselves to a worse, if they were placed in it; for it is of the nature of man, after a time, thus to submit with resignation to an invincible necessity. If it were possible for prisoners, by exertion, to better their position, they would feel its privations far more. They would contrast, in thought, their actual condition with that to which they might, by a succession of efforts, raise themselves. They would become daily more and more dissatisfied with the first, and would more and more crave the last. They would be willing to make any sacrifice to attain and, when attained, to preserve it. Their fate being thus placed in their own hands, their manly purposes and energies would be strengthened; whereas now, these, kept in quiescence, become every day more and more enfeebled. They would, almost of necessity, be improved by such a form of adversity, by such voluntary self-effort and self-denial; whereas, under prison discipline as at present conducted, they are, as a general rule, deteriorated. And, when discharged, they would go out prepared to contend successfully with the difficulties of free life, instead of, as now, weaklings, incapable of consistent effort, except under the eye of a task-master, and thus compelled, for the most part, by absolute want, to yield to the first strong temptation to renewed criminality.

The first and essential step to be taken in improving prison management, and making imprisonment at once formidable outside and improving within, is, therefore, to reduce the accommodations and comforts allowed in prisons as a matter of right to the lowest standard consistent with proper seclusion, decency, and support of life; but to enable good conduct and exertion to acquire better and better, as they are, progressively, more and more signally and steadily displayed. In this stage all should remain till they had undergone a fixed probation, performed so much work, and otherwise complied with every prison requisition, and the task, though graduated according to strength, should in every case be made a hard one, the object being to stimulate exertion

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by a strong motive. The first removal should then be a second stage, in which a little more comfort should be given, but still with a reserve suited to maintain the impulse thus once started; and thence to a third, a fourth, and so on, always upon the same plan. But from each higher stage misconduct should remove to a lower, or even the lowest, position, according to its degree. As exertion and self-command had raised, so must these continue in order to sustain. An upward tendency would thus be given to the prisoner's mind, a looking to his own actual and active exertions, and not to mere submission or evasion, in order to improve or make his condition tolerable; on which tendency might, by degrees, be founded almost any amount of better feeling and purpose—with, at the same time, a demand for exertion and a degree of hardship involved, with which, as leading to a beneficent end to the prisoner himself, public opinion would readily sympathize, which it would not do with an equal amount of suffering without such end, and to which, notwithstanding, the unreclaimed and unregenerated mind outside, little appreciating the ultimate benefit, would look with unmixed aversion.

The type of a prison, thus organized and managed, would be characteristically industrial, because industry, in every way, would be its special requisition, and the spirit of its administration would be, not arbitrary nor merely authoritative, but kindly, persuasive, and benevolent, though stern. Its first effect would be to improve the officers; its second, their charges; for it would be impossible to watch each man's conduct from day to day and week to week, constantly noting it, and suiting the exhortation to the deficiencies and the approbation to the improvement, without coming at length to take a kindly interest in the progress made; and equally impossible for the object of so much care and solicitude not in the end to respond to and endeavor to repay them.

It is thus that the stern school of punishment would be made really reformatory. Every man would have his fate in his own hands. His imprisonment would be very tolerable, and its duration comparatively short, if he were steadily diligent and well conducted; but if he were otherwise, it would be most painful, and might be even interminable. The most refractory could not but be thus at length subdued. Where a man keeps the key of his own prison he is soon persuaded to fit it to the lock; and even if the inner purpose continued unchanged, he could be much more cautious after a probation of this active character than after a period of mere endurance, and be much more able to contend with subsequent difficulties, and, consequently, be exempt from much subsequent temptation.

III. *Severe suffering, consequent on conviction of crime, by way of example and warning, has not hitherto been very effective in preventing its recurrence; the example of necessary reform, or at least of sustained submission and self-command through a period of probation determined by the results of voluntary exertion, as the essential condition of release, would be found practically more deterrent than severity.*

The idea thus presented to the criminal would be more definite, more intelligible, and more humbling to the false pride which usually attends the early practice of crime, and which derives gratification at once from its successful perpetration and from the bravado of thereby defying menaced vindictive punishment. With reform as the object of penal administration, the better feelings of even the most abandoned criminals would, from the beginning, sympathize; whereas, when merely suffering and degradation are imposed, it is precisely these better feelings that are most revolted and injured by them.

The direct object of public punishment should, therefore, it is con-

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ceived, be the reform, if possible, but, at all events, the adequate subjugation and training to self-command of the persons subjected to it; so that, before they can regain their full privileges in society, after once forfeiting them, they must give satisfactory proof that they again deserve and are not likely to abuse them. This principle neither prescribes punishment as such, which will, it is believed, always be necessary to induce submission and penitence; nor does it lose sight of the object of setting a deterring example. But it raises the character of both these elements in penal treatment, placing the first in the light of a benevolent means instead of a vindictive end, and securing the second, by the exhibition of law constantly and necessarily victorious over individual obstinacy, instead of being, as now, commonly defeated by it. It cannot be doubted that very much of the hardness of old offenders arises at present from the gratified pride of having braved the worst that the law can inflict, and maintained an unconquerable will amid all its severities; but for this pride there would be no place, if endurance alone could serve no useful end, and only submission and voluntary effort would restore to freedom.

The example of punishment may deter the fearful, the hesitating, those who have, as yet, scarcely entered on the paths of guilt; but it falls powerless on the bolder, the more advanced, and more dangerous criminals. These, like the baited bull-dog, are rather irritated and spurred on by such examples, which they interpret as so many challenges to persevere. They rush on with their eyes shut to the danger, and derive at once an animal gratification within themselves, and encouragement from their companions, who look on and applaud their daring.

In the evidence taken before various parliamentary committees, no testimony is more uniform than that of the small deterring value of mere severity in repressing crime. Indeed, so little to this end has the example of mere suffering proved, that it has passed into a proverb that "crime thrives on severe penalties." On the other hand, nothing would probably tend to check criminality more than the sight of a prison system which would uniformly subjugate all brought under its influence, and reclaim most of them, because such general defeat would be peculiarly distasteful to the criminal mind outside.

It should never be forgotten, but rather strongly insisted on, that the principles of example and reformation may and should be made to concur. In many prisons hard labor is introduced in the shape of the tread-wheel. This punishment is certainly an object of fear, and so far falls within a sound principle; but then, instead of reforming the prisoner, it has a directly opposite tendency. Indeed, no labor can be imagined more irritating than this. It is utterly valueless, since, with very few exceptions, no corn is attempted to be ground by it; and even where this is the case, the prisoner knows perfectly well that he is only employed in the place of the elements. Instead, then, of acquiring a habit of labor which may be useful to him when his term is expired, his abhorrence of all work, and his revengeful feelings toward those who impose it, are only aggravated and confirmed. Another grave objection to tread-wheel labor is, that it is destructive of free agency. In it neither willingness nor unwillingness can have any scope, since it is weighted to a pace, and reduces the zealous and the reluctant to the same dead level. This is always most demoralizing. Whatever the occupation, and whether productive or not, some scope for free agency should always exist in it.

It is certainly more for the interest of society, as tending much more

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effectually and directly to check the spread of crime, to endeavor earnestly and judiciously to reform criminals while in prison, and discharge those desirous of doing well in time to come, than vindictively, retributively, or, as it is called, exemplarily, to punish them there. It is not necessary, at the same time, while acting on this principle, to give up the object, highly useful in its place, of deterring from crime by setting an example of suffering in our prisons. On the contrary, it is held that a comprehensive and manly reform, not evaporating in professions, but exhibited in subsequent actions, can only be attained by subjecting each prisoner to a course of severe suffering, from which his own exertions can alone extricate him; but in every case this suffering should be studiously subordinated to the object of individual reformation; it must never be inflicted capriciously, or for the mere sake of example.

If the ordinary purpose and process of prison discipline were changed, and reformation made the specific end, and suffering only a necessary means, there would still be quite enough of the latter, since it is by fire, properly applied, that gold is purified, and not merely scorched and defaced. But when suffering is made the end, and reform a mere accident by the way, not only is it often disregarded altogether, but the position has even been assumed that it ought not to be pursued at all, because it is incompatible with the suffering necessary for example. Too much importance is at present attached to the agency of mere force in the production of moral effects in prison management. We thus habitually mistake even the nature of that on which we expend our efforts. We improve the mechanical appliances of our prisons, their means of coercion and supervision, and all the clock-work of their arrangements, and we think and talk of this as an improvement in their discipline; whereas, in truth, the more of all this there is, the more is true discipline, the discipline of the mind and will, impeded. The process that moves, directs, and strengthens these high intellectual and moral powers is infinitely different from any that makes or guides an automaton.

IV. *Punishment for the past should be distinctly separated from training for the future.*

Both these processes, when their object is reform, are equally benevolent, because equally essential to the end in view. There can as little be true reform without true penitence, as there can be the growth of the man without the birth of the child. But the necessity of both is not equally evident to criminals. Many such who would object to any restriction imposed as mere punishment, and evade it if possible, would nevertheless desire the reform, and ardently devote themselves to giving such a demonstration of it as would entitle them to their release, thinking nothing a hardship which tended to such an issue. It is only the separation of the two objects and processes that can overcome this difficulty; but that does it effectually, and the means employed are in strict conformity to the analogies of nature, which to follow, in such a case, is to obey the finger of the Creator. A fever must be reduced before its ravages are sought to be repaired; a wound must be probed and cleansed before it can be properly healed up. To do one thing at a time, and each well, is the rule in all nice operations; and the recovery of a fellow-being from habits of crime to virtue, by many considered even a hopeless undertaking, is at least worthy of an equally methodical and careful procedure, and is not likely to be promoted by a more unscientific or slovenly one.

This proposed separation may be placed in another light. Subjection to direct punishment is essentially an unnatural position. It interferes, necessarily, with that free agency, a sense of which belongs to the

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instinct of man, (an interference from which, in great measure, no doubt, springs the deteriorating and disappointing effect of punishment, when long continued;) whereas, on the contrary, a state of probation, of difficulty, of hardship even, supported by the influence of hope, and with its objects to be attained by means of voluntary exertion and self-denial, is a highly natural and improving state, the very state in which we are all placed when sent into this world, and to which, accordingly, our faculties are especially accommodated. Can the two processes, then, be combined to advantage; or, rather, can they be combined at all? We may try to combine them; we may even claim to have done so; but nature is too strong for us. Either the restrictions involved in the idea of punishment destroy the free agency which is the essence of probation, or the concessions made to the latter destroy the former; and so between these two horns of a dilemma the arrangements of our existing penal institutions are constantly fluctuating.

A subordinate proposition regarding the nature of punishment may be here brought in to advantage. It should be severe but short, and melt into probation, as that again into entire freedom, as gradually as possible, thus resembling the acute pain caused by some great calamity which at first is overwhelming, but by degrees gives way to renewed hope and elasticity. The analogy of nature is ever to be studied on this subject, for only as we conform to that analogy can any system of moral influence be reared. Two stages of separate imprisonment—the first intensely penal, the second softened and relieved by some indulgences—with moral and religious instruction anxiously and affectionately inculcated in both; social labor by day, but under separate confinement at night, with increasing privileges and liberty as earned by voluntary effort and self-control, and a final stage of natural training, under an imprisonment rather moral than coercive, are the gradations recommended by our author as, in his view, the best for a reformatory prison discipline. But if the principles of the system are seized, we need not be solicitous, in any of the stages, about the perfection of the apparatus by which they are worked out. The error of modern penal science is the importance attached by it to mere physical arrangements, as admirably constructed prisons, &c. In operating on the human mind, the less store that is set on such appliances the better, provided always that the structure and philosophy of the mind itself be rightly apprehended, and that this knowledge be judiciously applied. It is the will that is to be gained, not the body only; and just in proportion to the importance attached to fettering the latter, it is to be feared is the carelessness about winning the former. Bad workmen never have good instruments; good ones rise above petty inconveniences. Men are most easily compelled by a strong external apparatus; they are best led without it. Men never turn from crime *per force;* this is a work of persuasion, rather than of coercion; and generally of persuasion applied under an organized system, which powerfully, though naturally, acts upon the will by its inherent forces.

The entire course of punishment and probation together, under this system, should not, and need not, be made nearly so long or so severe as that usually allotted at present to punishment alone. The end proposed—individual reform—should be distinctly and prominently kept in view throughout; and nothing is likely to operate worse, for such a purpose, than a necessarily long punishment. Such a punishment is, in some respects, worse than a corporal infliction; for men accommodate themselves to a system which is unavoidably destined to embrace them for a long time; and they study rather to endure than to rise above it.

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Ordinarily, a man convicted of crime should not be sentenced to a course of purification, through which industry, good conduct, and economy of marks would not carry him within from two to four years; and for minor offenses, the indispensable time should be considerably less. Continued misconduct may, indeed, prolong these periods to five, seven, or even ten years; but without the moral torpor and injury produced at present by the four, six, and eight years of necessary incarceration before any indulgence can be obtained. The strongest spirits are unable to bear up against "hope deferred" through such a period; and they either sink into a sullen despair, or seek to forget, in present dissipation, the long duration of their captivity.

V. *Fixed rations, beyond bread and water, should be abolished in prisons; and the prisoner should be required to earn his food, as well as all other privileges and comforts, by good marks; that is, by diligence and good conduct.*

The great point with the prisoner, under Captain Maconochie's system of prison discipline, is to earn good marks, attainable only by diligence at work and lesson-learning, and by general good conduct. These marks have a manifold value. There is one sentiment common to all prisoners, and that is, a passionate desire to regain their freedom, or even a sensible approach toward it. Now, the essential value of the marks earned consists in this, that the accumulation of them contributes to this end. But they have other elements of worth, for they are used, and are indispensable to this purpose, in the purchase of whatever conveniences, comforts, and opportunities the prisoner is provided with during his confinement, such as food, clothing, bedding, room-rent, books, stationery, postage-stamps, schooling, and the like. Marks, therefore, are a species of wages in this system, and are greedily coveted as such; but they are, and must be, expended as well as earned; and it is only the accumulation of them that tends to the attainment of liberty. It is evident that the balance may be on the wrong side here, as it often is in free life; and the motive, therefore, is as strong to economize marks within the prison as it is to economize in the expenditure of money outside. Marks, then, as a form of wages in prison, at once raise the men above the demoralizing condition of slavery, in which they are otherwise plunged. The forfeiture of these marks for misconduct supplies the place of lashes for prison offenses. Their convertibility, at the prisoner's own will, into immediate gratifications, thereby, however, prolonging detention, tends strongly to promote and prove steadiness and self-denial, that is, will-power; and, in a word, the whole scheme, it is claimed, is pregnant with untold moral good.

So much, preliminarily, in general explanation of the mark system. I come now to the special subject of this section, as set forth in the proposition at its head.

Fixed rations, especially when ever so little too good, have an injurious effect on the minds of prisoners and on the community outside. To the latter, when in distress, they become a temptation; and they accustom the former to having their wants met without forethought or exertion of their own. If each prisoner was required to pay in marks, that is, in labor, for what he consumes, besides the whole tale that he must render for his liberation, both the above-mentioned effects would cease, and with them much collateral evil. A prison would no longer be looked to as a refuge in hard times, and questions of dietary would not arise. The improvement would be vast, both moral and physical, if all were required to diet themselves at their own cost, paid in the currency to them most precious, as being the only coin with which they can buy

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back their freedom. They would in this way be made to feel, most beneficially to themselves, the burden of their own support; would learn economy, and would become inured to and content with coarse, because cheap, fare.

In existing prison systems, fixed rations are issued to all alike, without regard to any effort made to earn them. The necessity of exertion, previous to enjoyment, so beneficially as well as forcibly pressed on the laboring poor in society, is here entirely lost sight of, and a bounty is almost directly offered to indolence and crime. The supply of rations without cost to the prisoner is justified on the plea that, as he is, by the very fact of imprisonment, debarred from his customary means of earning a subsistence, he must be otherwise supported. This is true, and readily granted. But must he, therefore, be *gratuitously* supported? He cannot earn a subsistence by ordinary means, but may he not be supplied with extraordinary ones instead, viz: a judicious mixture of moral and physical task-work, in the accomplishment of which he may have presented to him precisely the same motives to exertion, diligence, economy, prudence, self-denial, and the other minor virtues of social life, and be kept habitually active in bondage as when virtuously exerting himself in free society? Nor is this all. A criminal who has forfeited his liberty through misconduct may surely be justly required, besides maintaining himself, to purchase back his liberation by a proportionate period of good conduct. This postulate being granted, the whole mark system is admitted, since the marks are proposed as mere counters, like money in free life, by which exertion and obedience may be appraised and their exchange facilitated.

But apart from the motives to good conduct lost to prisoners by making their support gratuitous, it is disadvantageous, morally, to relieve laboring men for a time from solicitude and daily effort specifically for their subsistence; it operates injuriously on the habits of soldiers and sailors, as well as of prisoners. If made to pay (in marks earned by effort) for their maintenance, these last should also have a discretion (and not too much restricted either) both as to its quantity and quality, with a strong interest given them at the same time in economy. They would thus be trained not only to habits of steady industry, and that from an inward impulse, always the most healthy, but also to those of self-guidance and self-control. Nothing could be more easily arranged than this in the management of prisoners; nor, were the motive only strong enough to restrain them, could anything be, to self-indulgent minds, as usually possessed by prisoners, either more immediately painful or prospectively improving. The limits of a strict prudence might in the beginning be frequently exceeded; but, after a time, as the consequent prolonged detention became irksome, and especially as its end approached, the tendency will be rather to excessive economy than to excessive expenditure.

VI. *The primary aim of public punishment should be the reformation of the criminal—the making of upright, industrious freemen, rather than orderly and obedient prisoners; and this is always practicable, when sought by proper methods and agencies.*

The words of our Saviour, and much more the whole spirit of his instructions, may be adduced on this head: "Seek ye first the kingdom of God and his righteousness, and all these things will be added unto you." Seek first the reform of the individual culprit. This is a Christian, an indispensable duty. Beginning thus at the right end, laying the foundations right, the other objects of punishment will fall into their places, and be readily attained. But by reversing this process, and

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omitting this element from our calculations, we only proceed from difficulty to difficulty; and we almost systematically exclude religion from our penal science by excluding from its purview that object—individual reform—on which religion peculiarly fixes her regard.

The great error in existing systems of prison discipline is, that they aim too exclusively at making orderly, obedient, and submissive prisoners, and not nearly enough at training active, efficient, industrious freemen. The only apparatus at present employed in prisons to effect the latter object is religious instruction—the highest and holiest of all agencies in itself, and which, when duly combined with others, purifies and elevates them also. But alone even religious instruction is not sufficient for what is here required. It only teaches virtue theoretically; whereas a field of practice must be associated with it to give its lessons their highest value and their greatest effect. The lessons of virtue and piety, without this, often evaporate in mere words. And many of the most useful social qualities—energy, activity, ingenuity, industry, prudence, economy, and the like—have little distinct connection with religious instruction. They are often strikingly present where there is little of this, and as strikingly absent where there is much. A mixed training is thus required, temporal as well as spiritual, worldly as well as religious; the first, to give the power to do well, the second, the will to direct that power aright.

It is to the want of a due combination of these elements in our ordinary prison discipline more than to any necessary circumstances in the condition of discharged prisoners that their frequent reconvictions and the difficulty in disposing of them seem mainly due. Were men systematically taught in prison to be active, industrious, prudent, economical, and capable of guiding themselves, instead of depending on the guidance of others, their difficulties on returning to society, and their conduct and reception in it, would soon be very different from what they now are.

It is the duty, and still more the interest, of society, in dealing with its criminals, to try earnestly, while they are in custody, to reform them, to develop especially manly virtues in them, to qualify them to contend successfully after their discharge with the difficulties besetting their social condition, and so to direct their thoughts upward, instead of allowing them to blindly struggle on, as too many now do, without thought, or care, or hope, or, consequently, desire to rise in life, under the belief that they are born to steal or starve, and preferring the former to the latter alternative. How must the general moral tone of the lower classes be sunk through contact with individuals entertaining such thoughts! On the contrary, how would this tone rise if the liberations from the prisons were, instead, to carry into society a healthy current—men with their powers developed, their purposes improved, their characters strengthened, and their aspirations and efforts all directed upward! "It is impossible, it is a mere Utopia," is a thought which, on such a suggestion, doubtless rises to the lips of many in the community. But have we ever tried? Have we ever used the means suited to bring about such a consummation? We have not; we have bounded our endeavors by the object of making good, obedient, and in many cases professing, but in few performing, prisoners. We have lowered their moral tone to make them submissive; and having thus sown tares, we have assuredly not reaped wheat; but are we thence to infer that wheat, by a different husbandry, may not be raised at all? The mark or task system seems alone competent to compass the end in view, its essential principle being to influence by hope more than by fear, thus

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lifting the prisoner up, instead of crushing him to the earth—the whole being so organized that the rewards, and chiefly that of restoration to freedom, shall be certain, affording thus motives for steady, consistent exertion, and not merely to occasional or fitful effort. Prison life would thus be made to closely resemble ordinary life, and for that reason the arrangements of the former could best prepare for a return to the latter. Its machinery, too, once set in motion, would nearly work itself, and be little liable to abuse; its provision of labor, wages, purchases, and forfeitures, all explaining themselves, and nothing being wanted in it but that punctuality of account which is maintained in every well-regulated factory. A criminal once convicted and imprisoned should never, under this system, get away till he has earned his marks. No application should be listened to on this head. However, this is but a detail of the system, and not a vital part of it. It is to the fundamental principle that value is to be really attached; and to this, the highest. The system of public punishment cannot be radically improved, without letting this principle in; and attempts to amend it will, in practice, be successful only in proportion as they approach it. For, consider what that principle is, and how it proposes to operate. The basis of the mark system, that on which the entire superstructure is raised, is this simple idea, that if we would reform criminals, and really fit them to return to free life, we should subject them, while yet in bondage, as far as possible, to the same checks and impulses as make men prudent, honest, industrious, and otherwise well-doing in society; avoiding at the same time, as far as may be, treating them as slaves, assured that with whatever slavish virtues we may endow them, as obedience, submission, and the like, there will always be generated in them a superabundant admixture of slavish vices too—cunning, falsehood, self-indulgence, subjection to external influence, and so forth. The great point, then, in a reformatory prison discipline, is so to arrange and regulate our prisons as to stimulate and call into exercise, in and by them, the motives, impulses, and habits which make good men and women outside of them, and earnestly to discourage and, as far as possible, discard those which generate weakness or lead to vice.

It is peculiarly important that reformatory principles and processes should be introduced and energetically acted on in county and municipal prisons, those minor or, as we may say, elementary penal establishments, through which criminals usually pass when entering on their career of crime—their infancy in it, so to speak—and in which, accordingly, it is important that the most strenuous efforts should be systematically made to turn them aside from it. For the repression of crime, very much, aside from the rescue of individuals, will depend on the nature of the influence exercised by discharged prisoners on the society again receiving them. If really turned from crime, and desirous of avoiding it in time to come, they become each, as it were, an apostle of virtue in the community. Not to lose caste among their fellows on account of their altered conduct, they seek to justify this by such arguments as occur to them, many of them the same as were addressed to themselves while in prison, and which had most influence over them there. The good seed planted in them becomes thus widely cast on the waters, and even where individuals fail in their own persons of exemplifying its fruits, it is not altogether lost; it becomes diffused over the whole class usually supplying criminals, and beneficially influences their thoughts and manners. While, on the contrary, the influence of prisoners discharged, unreclaimed, impenitent, and hardened, as they now commonly are, is equally extensive, and more than proportionally per-

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nicious; it is a match set to gunpowder. This aim is most important, it is even fundamental, to the system; and it throws extraordinary interest on the reform of prisoners; but its practical utility will of course depend on the degree in which we may hope to succeed in effecting it. From long experience Captain Maconochie is confident that, by the use of right measures, success may be very great in this endeavor; only, however, by altogether reversing the arrangements now commonly enforced in prisons. These, having been organized without reference to reform, and looking only to coercion and example, are almost as if specially intended to be opposed to improvement in moral character—a comprehensive charge, but whose justice is incontrovertible.

This view of the susceptibility of criminals to reformatory influences deserves the most serious attention of all who are interested in the question of prison discipline, and are duly impressed with its vast and vital importance, morally, socially, politically, and religiously. Considering the interests involved, and how deeply they concern the whole community, it is deplorable to see existing prison management guided, in the main, by almost diametrically opposite views, and to consider how flagrant the error on which these views are founded. They begin by confounding the opposite aims of punishment, example, and reformation, making it almost impossible, as a rule, to attain either. All that ought to be made contingent on good conduct alone, as food and immediate comforts, is made certain and gratuitous, whatever the demeanor evinced by the prisoners; and that good conduct, which ought to be sternly and even peremptorily required, is left so uncertain, and is indeed so generally dispensed with, that criminals, in crowds, are daily discharged through mere flux of time, who are proclaimed altogether incorrigible. On the ground of actual experiment, it is denied that there are any such whatever. There are many prisoners weak, and some deplorably wicked; but so long as Divine Providence is pleased to retain men in this world of probation at all, our right may well be disputed to regard or pronounce any to be irreclaimable. Our duty is first to try some new method, to try indeed any and all hopeful methods, to reclaim them. But under present notions we reject all rational means of promoting their recovery; and, these failing, we quietly pronounce them irreclaimable, just as an engineer might do who, charged to reduce a strong fort, should fling away his trenching tools and then pronounce it impregnable. In such a case, with whom really lies the blame, the prison officers or the prison inmates? And which are the irreclaimable while such a system is persisted in? It was the opinion of this able writer, and equally able, as well as successful, prison manager, that prisoners could be saved to a man by the application of right principles and methods in prison administration. He feared neither bad habits nor any other difficulties. He believed that, while life and sanity are spared, recovery is always possible, if properly sought. There is infinite elasticity in the human mind if its faculties are placed in healthful action, and neither diseased by maltreatment nor locked up in the torpor of a living grave.

It is impossible to overrate the value of reformation as the primary aim of prison management, and difficult to appreciate even its real importance. The reform of prisoners has a wide bearing. Its systematic pursuit, apart from the repression of crime by positive punishment, would have a strong tendency to raise the moral tone of the masses. Discharged criminals constitute our most direct channel of communication and influence with the morally lowest classes of the community. If our prisoners, on liberation, return among these either weak or wicked,

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their discourse and example must tend powerfully to countenance and aggravate their already downward tendencies; whereas, if they return to them well-purposed and firm in their virtuous intents, they will, beyond a doubt, as speaking the language of experience and deliberate repentance, contribute to check such tendencies, and to promote the growth of better sentiments and aspirations.

VII.—*Prison discipline, to be truly reformatory, must work with nature, not against it.*

This principle has already come into view in several of the previous extracts, but its importance entitles it to a more distinct consideration. In his account of Norfolk, which he found "a turbulent, brutal hell, but left a peaceful, well-ordered community," after a detail of the remarkable results accomplished in that most remarkable experiment, Captain Maconochie adds:

> My task was not really so difficult as it appeared. I was working *with* nature, not *against* her, as all other prison systems do. I was endeavoring to cherish, and yet direct and regulate, those cravings for amelioration of position, which almost all possess in some degree, and which are often strongest in those otherwise most abased. Under the guidance of right principle they rose easily to order and exertion. I did not neglect the object of punishment in my various arrangements, but I sought it within the limits assigned alike by the letter and the spirit of the law, not by excesses of authority beyond them. The law imposes imprisonment and hard labor, and these, in the fullest sense of the words, my men endured. Every one of them performed his government task, besides the labor bestowed, as he could catch the opportunity, on his own garden or other personal interests; but he was saved, as far as I could save him, from unnecessary humiliation, and encouraged to look to his own steady efforts for ultimate liberation and improved position. And this—not the efforts of an individual, zealous as they certainly were—was the real secret of the altered aspect of Norfolk Island, in my time, from what either preceded or followed it.

The principle thus set forth, in its application and issues, is directly to existing systems of convict management. Seeking their ends, whatever those ends may be, by a species of domestic slavery, this feature alone (even without others of like deformity) sets them aside as *media* of individual reform. Such a plant never grew in such a soil. This principle is opposed to the silent system, which not only groups men for punishment alone, and, through its minute and artificial regulations, demoralizes, by familiarizing them with resistance and evasion; but it acts thus precisely with a view to crush those social feelings which, on the contrary, it is the object of a natural treatment to encourage and train. Such rough-riding over human nature is irreconcilable with every principle legitimately founded on its study. Gardening with a pack of hounds, and thus studiously defacing what we seek to beautify, seems the nearest approach to such folly.

Prisons should be great workshops or industrial establishments, where the inmates are systematically trained to be skillful, steady, sober, and *voluntarily* industrious; where all the arrangements for labor are at the same time so like real life, so identical with, as fully to prepare for it. The voluntary character of the labor cannot be too strongly insisted on. Compulsory labor is, as a rule, rude, reckless, unskillful, and therefore unprofitable; it is free and still more emulative exertion that is ingenious, skillful, and productive. The economical improvement under such a system would be felt almost as soon as the moral; it is a mistake to suppose that these can ever be successfully dissociated, but it would require great care and discretion, in the first instance, to organize such establishments. The art employed must be of that high character which conceals itself; which is artful by being artless, and which is content to sow good seed and wait, without forcing, the corresponding return. In such a situation it will always be easy to produce immediate results;

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the real difficulty will be to be early persuaded that they are likely to prove worthless nearly in proportion as they rise to the surface with a slight compression. It is doubtful if this wisdom will, in any hands, be attained until taught by experience. The unerring test of renewed convictions after discharge will at length teach it. When the lesson is sufficiently impressed to move forward too fast, to give free agency a large scope, to suffer temptation to assume all its customary forms, to regulate but encourage much, then complete success may be hoped for, in what should ever be the great aim of public punishment, the reformation of the fallen.

It is argued that, however the combination of prisoners with free persons might be advantageous to the former, that of prisoners with prisoners cannot be so to each other. But this is a gratuitous and even demonstrably erroneous assumption. It is much easier to influence numbers together than the individuals separately of whom they are composed, and when moved they will thus go much further; they mutually assist each other and beget a common enthusiasm. There is, besides, strange as it may appear, a specific tendency in numbers toward right feeling. The clap-traps of a theater are generally high moral sentiments. The better feelings of a mob are rarely appealed to in vain. In the army and navy the most heroic self-abnegation, even unto death, is often called out at a word. In none of these instances, probably, could the same responses be obtained from even a single individual, which he renders spontaneously when he forms one of a body. On Norfork Island, Captain M. avers he could have done nothing with each prisoner separately; the best of them would have remained only dogged under his exhortations. In Birmingham he would neither have gained the boys as he did, nor would they have been able to influence each other outside as they did, if they had been shut up in separate cells. And Colonel Montesinos's experience at Valencia was all of the same nature.

The use of marks as wages, under this system, would enable its managers to make life within prison a close copy of that without, for a return to which it would, accordingly, be the best possible preparation. At present nothing could be more dissimilar than the two; and the lessons inculcated in the prison are not only inapplicable in free society, but even, in most cases, directly opposed to what it is most desirable that men should possess when they go out. The patience, docility, and ready subservience to external impression, which make an excellent prisoner, equally contribute to make a ready dupe in another sphere. Moreover, prisoners, as at present managed, are clothed, fed, lodged, and even allowed indulgencies, all by regulation, without the least reference to their conduct, and without care or sacrifice on their part to obtain them. The victims of this management are thus kept together without immediate solicitude, and are but as so many automata in a master-mechanic's hand. Surely this is no suitable preparation for returning to a work-a-day world, with its anxieties, its responsibilities, its troubles, its infinite varieties of choice among daily recurring perplexities; and if some of the difficulty in adequately preparing to encounter these is necessarily inherent in imprisonment itself, at least it would be much lessened by the introduction of marks and their use as money within the allotted pale.

The rigorously coercive systems, by whatever names known or under whatever forms existing, viewed as reformatory agencies, are based on an essentially wrong principle. They pull down, but do not build up; they subdue, but do not reclaim. By their minute and artificial regulations they destroy individual character and the power of self-direction, and

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so hoop prisoners about in prison that they are ready to fall to pieces afterward at the first touch of difficulty or temptation. Such systems cannot be called good; no system can in which, as in free society and the ordinary conditions of life, men cannot, under a strong, certain, and universal motive, be themselves the chief agents in the work required, that of subduing their evil and nourishing their good tendencies. The mark system will certainly secure such co-operation. Its machinery, though acting chiefly on the will, is more stringent than that of the most coercive system. It must be yielded to, and even willingly. But its force lies in appeals to the judgment, feelings, and interests of prisoners, all for their own advantage; and the most stubborn will thus give way to it. By granting its prisoners some latitude of action, guided by motives, it cultivates the powers of self-direction, prudence, foresight, self-denial, self-command—in a word, all the qualities which enable men to maintain a purpose once formed.

From the foregoing detail it will be seen that the closest possible resemblance is given, in arranging the form of society, to the type of free life. It is as a preparation for return to this that the whole scheme is organized.

VIII. *The principle of mutual responsibility, that is, of grouping prisoners together in small companies, made to resemble as closely as possible ordinary family life, will be found to be highly conducive to their reformation; the social principles and relations of humanity are the great springs of improvement, and of vigorous and efficient exertion, in free society; duly regulated, they will prove equally so in the treatment of persons imprisoned for crime.*

There are four essential principles of the mark system of imprisonment. The first is, that instead of sentences for a fixed time being passed on criminals, they be required, by diligence and good conduct, to earn, in a penal condition, a certain number of marks of approval. The second is, that the marks so earned be used to stimulate and restrain them, precisely as money is used to stimulate and restrain free people in ordinary life. The third is, that a reasonable number of marks be credited to them daily for work performed, for attention to lessons, and for general good conduct; that a fair charge be made for provisions and other supplies furnished; that moderate fines be imposed for misconduct; and that the clear balance, the actual surplus accumulation, over and above all deductions thus made, alone count toward liberation. There is a fourth principle, regarded by the author of the system as scarcely less important, viz: that when men are associated under this system, they be required to distribute themselves into small parties (say) of six or eight, *with common interests;* so that each man shall be made to labor and refrain for others as well as for himself, and exertion and good conduct shall be thus rendered popular, and idleness and misconduct unpopular, in the community, because each exhibition of them affects, favorably or unfavorably, the fortunes of several together.

In the earlier stages of treatment, devoted peculiarly to punishment, the prisoners should not be combined in social parties; and the first stage of all should be, as mentioned under another head, separate imprisonment, for men will repent best alone. But the object is an important one at an early period to call forth social virtues by creating social ties. This is, indeed, the key-stone of the whole system, the essential principle, without which its other parts would be of comparatively little value. A prison system must study to make good members of *society*, or its efforts will be vain, because they will be directed too low, and because they will leave untouched the selfishness which gives to vice

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its worst character of malignity, and deprives even good conduct of all pretension to virtue. In modeling the social parties, however, too much strictness should not be exercised. The type of families in ordinary life should be followed, but not exceeded. Thus *interests* should be common among the members, but not necessarily either occupations or dwellings. On the contrary, by admitting separation in these particulars, friends will be enabled to combine and support each other, though of different mechanical tastes and powers; their friendships will be cemented, which is precisely the object desired; quarrels will be prevented in the several parties; the educated and uneducated will be enabled to combine without pain or a feeling of degradation, and consequently without deterioration on either side; and the influence of each individual on his companions, and of his companions on him, will be more moral and less material by their occasional separation.

Prisoners, thus distributed into small parties with common interests, both labor and refrain from generous and social, and not merely from selfish and personal impulses. Great importance is attached to this feature in the mark system, and its value was abundantly proved on Norfolk Island. As before stated, it makes good conduct popular and bad conduct unpopular, since each affects others as well as the actor himself. It thus deprives offense of a great stimulant which it now has, arising from the sympathy, sport, or other excitement which the sight of it creates in the lookers-on. It transfers this *stimulus* rather to good conduct. It opens the hearts of those who sacrifice a personal gratification to the good of their companions, and thus tends to raise them in the scale of being. It gives every man a certain number of custodians—his most intimate friends and companions—all interested in supporting his good tendencies and suppressing his bad, investing him with a right to the same supervision over them. And by giving a social and almost family influence over them, as opposed to a merely gregarious one, it directs a flood of wholesome influences on all. Without some social organization, it is almost impossible to make a general impression on numbers together. Each impulse communicated perishes as it enters, for there is nothing in the man's own position to sustain it; and the least improving state of society in which men can be placed is thus one of gregarious assemblage, without common ties, or interest, or concert, or combination, among themselves. Instead of bringing prisoners together, and yet endeavoring to keep them separate and uninfluenced by each other, (which is impossible,) the true and natural policy is to combine them in circumstances which will make their mutual influence necessarily beneficial. And few who have not, as our author says he has, tried and proved this plan, will easily conceive the power it gives a superior employing it. The change produced on the convicts at Norfolk Island under this system was, he avers, most remarkable. He gives the following interesting detail of the process by which it was effected:

The men previously locked up every night in a barrack, in which there were lodged fifty and sixty together in large dormitories, without lights or any immediate superintendence to prevent abuse, were gradually thinned out and hutted in the bush near their field labors. The best men were taken first, and under the check of the officers they were allowed to choose others as companions when able to accommodate them, on condition that they became severally responsible themselves for their good conduct. A strong field police was at the same time formed of prisoners, but with a considerable value attached to their situations, and who, under the immediate direction of the chief constable and police-runner of the island, both free, behaved generally remarkably well. Gradually many men were thus got out. The best conducted were always taken, and, their privileges being much coveted, others behaved well to obtain the same. They had all small gardens allotted them, on which they were encouraged to grow vegetables, and to rear pigs and poultry, both for their own use and for

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sale among the officers, as they were able. They thus all speedily acquired a little property; and with its possession they also acquired an interest in its rights. Theft became unpopular among them, and at last almost unknown. There was every temptation to it, and every facility for its commission; yet it was abstained from. The writer had himself a large garden in the midst of them, almost uninclosed, and with a deep well in it of peculiarly fine water, which all were allowed to draw from at will. His borders were full of the finest fruits, pine-apples, bananas, grapes, melons, figs, guavas, and the like; yet nothing was ever taken, and the other officers' gardens were equally respected. At the same time, the tale of government work required was not abated, and the men were even seen sometimes to work at their little allotments by moonlight in order to do them justice. The scene was a remarkable proof of the power of mere arrangements to call out the favorable points in human nature, even in the most unfavorable circumstances; and though some of the facts seem scarcely credible, they are still well attested, and the effect of the discipline was not merely transitory. Two years after he left the penal colonies, the writer obtained returns of the conduct subsequently of these men, both in New South Wales and Van Diemen's Land, which were remarkably favorable. And in a private letter written from Van Diemen's Land, about four years afterward, (May 20, 1848,) are these words: "The conduct of your Norfolk Island men generally has been most exemplary; they have shown that a reformation far greater than has hitherto been effected in any body of men by any system, either before or after yours, has taken place in them. With scarcely an exception, the whole are doing well, and some are in a respectable way of business advancing fast to prosperity. They are a credit to the name they bear of Captain Maconochie's men."

Captain Maconochie, in his writings, insists much upon this point, that man is a social being, and that his duties are social; whence he deduces the principle that only *in society* can prisoners be duly prepared *for it*. Only thus can a field be provided for the exercise and cultivation of the active social virtues, and for the habitual voluntary restraint of active social vices. To prepare for society in society seems just as requisite as to send men to sea to prepare them to command ships, or, in any case, to accommodate the preliminary education of individuals to their ultimate destination. Penitence, good resolution, moral and religious principle are an excellent foundation—they are, indeed, the only sure foundation; and if only once really instinct with life, they will ascend and pervade whatever superstructure is raised on them. But where their dictates have been originally weak or systematically disregarded, it seems as idle to expect that their mere theoretical inculcation late in life, however enforced by suffering, will be sufficient to make them the dominant guides of future conduct, as it would be to hope in this way to teach a trade, or any other practical application of abstract rules. Moral lessons, to be taught profitably, require a field of progressive experimental application the same as engineering does. In the one case, as in the other, if the important element of friction is omitted in the pupils' studies and in their training, if they are only inculcated from books, and their respective truths are not enforced by experience, the end sought will not, ordinarily, be attained. *Non vi, sed sæpe cadendo*—not by violent or artificial machinery, but by frequent failures—moral habits, like mechanical skill, are developed and strengthened.

The superiority of such a system, that is, of a social training over any ascetic or merely individual treatment, may be placed in various lights:

1. It would be more natural. Man is born with social instincts and tendencies; his impulses, habits, and virtues are social; and hence in society only can they be suitably exercised. Moreover, only in society is hope usually vigorous and exertion sustained. Solitary beings are uncertain in temper; and solitariness of feeling, that is, selfishness, is the known and admitted source of every description of vice. Hence proceed, in great measure, the vicious tendencies which at present prevail in prisons. But with a social existence a different result might

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be looked for. With common interests, their hearts, which are now shut, would open. They would become alive to others' feelings, instead of brooding over their own. They would recognize their relation to society at large, and the obligations involved in it. Reformers are too anxious to re-create. Instead of following nature they seek to change it. They impute their failure to *its* perversity, when it is *their own* that is in fault. They do not seek to imitate natural agencies, but to improve on them. Instead of training and guiding, they try to remodel. Can we wonder that they are, for the most part, so little successful?

2. Being more natural, this mode of discipline would be also more easily organized and maintained. The opposite of this is, indeed, often asserted. The difficulty of finding suitable agents to work the system has been much insisted on. But this idea is a misconception, founded on a superficial examination of the question. The difficulty in other systems of prison discipline arises from the importance attached in them to minute regulation and to mere physical restraints, without any adequate effort being made to gain the prisoners themselves, to control their wills, and so to change the character, and not merely to restrain the manifestations of their impulses. But the mark system reverses this process. The difference of effort that would be required to overcome the obstacles in its way, as compared with that required in others, would thus be like that between the strength required to confine steam in a highly expansive state and when it is chemically altered by condensation. Natural agencies assert an immediate mastery, whereas artificial restraints operate with difficulty, and too often with a melancholy destruction of material, which, in this case, is men, and not mere material objects. Aspiring after marks of commendation, which they may in turn exchange for immediate gratifications or ultimate release, prisoners, under a social system of training, would be exactly as freemen laboring for wages, and be just as easily managed; or rather they would be more so, for both their dependence and stake would be greater. And as every description of good conduct would have a marketable value, as well as labor performed, the corresponding habits of order, submission, self-command, and the like, would be more generally formed, and their effects more uniformly exhibited.

3. It is easier to create an *esprit de corps* in a body of men than to regulate the impulses of any single individual. Man is a social being; nor can he wholly resist any given social tendency, however opposed to it may be his personal inclinations. The cowardly soldier yet maintains his place in the ranks; the unprincipled man yet pays the homage of hypocrisy to virtue. The facility of working a social system of prison management would be in nothing more striking than in the fetters which it would thus throw around even the most hardened; fetters which would be only the more effectual because they would be unseen, and because they would proceed from the prisoner's own class, unconsciously to himself, and therefore unresisted.

4. The next interesting point of view, accordingly, in which the system here advocated may be placed, is this uniformity of its action. All would be impressed by it, more or less, and the greater number very much. Good prisoners are now the exception. Under the system proposed they might be expected to become the rule; and the circumstances being made favorable to virtue, as they now are to vice, the exhibitions would as punctually correspond in the one case as in the other. The efficiency of an army is in proportion to the discipline, intelligence, and consequent uniform action of all its members, and not

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to the superiority of a few. Thus virtue is maintained in a community, not by a few high examples of it, but by an elevated general standard.

5. The superior efficiency of a social school of reform, even for obtaining a high measure of individual virtue, constitutes another strong recommendation. It may aim far higher than any system of individual treatment, and may much more confidently hope to compass even the highest. Men are excitable in society. Where one goes another will follow, and he will seek not merely to follow, but to outstrip. It is thus that armies rush impetuously where the bravest would hesitate to advance alone, and boys at school exhibit, under an impulse of emulation, a patience and self-denial foreign to their age, and which none of them, probably, would singly command. Is there any reason why this excitability may not be enlisted in the service of moral reform, as well as of military or moral excellence? It is presumable that, if moral reform were distinctly pursued as the first object of penal management in associations properly combined to promote it, and with those encouragements which, in dealing with ignorant men, are often as necessary to define virtue to their comprehension as to stimulate them to its practice, it would, in the great majority of cases, be attained. Once actuated by any common impulse, uneducated minds are always more entire in their subjection to it than those whose views are more extended through culture; and where they act in the mass, their movement becomes accelerated at every step.

6. A prison discipline, organized as proposed, would be much more accommodated to varieties of temper and character than any that depended on mere physical or coercive apparatus. Every man's lot under it would be in his own hands; his companions would be of his own choice, and on his and their conduct and industry would depend both his daily comfort and the length of his detention. No system, accordingly, could be at once so benevolent and so just. Its object being personal reformation, it would seek such reform by the most agreeable of all means—the mutual action of chosen companions on each other. Rising above the justice which aims to accommodate punishment to mere past offense, at best an erring and often a false criterion, it would put every one on a trial of *character* merely, and deal with him on this only, which is what society has chief interest in. For much more important is it to a community to ascertain, before a prisoner is released, whether he is likely again to commit offense than whether his suffering has been made adequate, in a vindictive sense, to that which is past. And much more would even abstract justice be satisfied by making penal treatment bear a relation to habitual disposition than by accommodating it to that which may have been only an accidental extreme evidence of it. To this quality in the system the greatest value is to be attached. It not only renders punishment benevolent as well as just, but it rests its claims to these qualities on higher grounds than are usually taken in recommending them. The benevolence is not that of inflicting the least possible unnecessary hardship, but of conferring the greatest possible necessary benefit; and the justice, humbly copying that ascribed to omniscience, looks beyond one occasional action, and seeks rather to grapple with the impulses which may excuse, or in many cases constitute, its demerit. Its language to the criminal would not be, "I will keep you till you have paid a certain forfeit for a past offense," but, "Having exacted a certain moderate penalty for that, I now retain you till I have qualified you to meet the requisitions of society, on your return to it, that you may not again fall, as you have done." The balance would not be, as now, the uncertain and, to all practical purposes, useless one be-

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tween crime and suffering, but the highly practical and useful one between the demands of society and the attainment of the power and will to meet them.

7. The proposed system of prison discipline would be almost self-working, which would be another strong point in its favor. Scarcely any discretion is lodged in any part of it; and its close resemblance to real life would insure the action of the same principles in maintaining it. The only difference is in the circulating medium by which it is proposed to balance its accounts. By making this to consist of marks of commendation, exchangeable in the right hands for anything, but in the wrong utterly without value, a great many good effects would be produced. All occasion of dishonesty would be removed; attention would be fixed solely on proper methods of obtaining indulgences; these methods would rise proportionally in estimation; the connection between them and their beneficial consequences would be obvious to the meanest capacity, and they would thus be imprinted on the habits, as well as made clear to the understanding, of all concerned. But in no other respect is innovation on the habits of ordinary life sought to be made; and, under its arrangements, injustice even in this would be scarcely practicable, and if it were ever so easy, it would be almost without motive.

8. Such a system would be self-checking—another great advantage. Its object, personal reformation, being a tangible one, obvious to the senses, the attainment or non-attainment of this end would exhibit wisdom and ability, or the want of these qualities, in its administration, and that without delay or uncertainty. Slow progress in reform, whether through idleness or extravagance, would be the result of one set of errors; renewed convictions after discharge, of another. At present there is no similar check on any faults of administration, however grave. This is, doubtless, one of the main causes of the prevailing difference of opinion as to the comparative efficacy of existing systems. It is impossible to estimate the value of vindictive examples, perhaps because they have none; and the sad result of general deterioration, with its concomitant of repeated convictions, is overlooked as unimportant. It would be quite otherwise if a fixed object were in view, which could not be mistaken. The very pursuit of such an end, the attainment or non-attainment of which must be at once obvious to every observer, would close the avenues to carelessness on the one side, and malversation on the other, even if the fear of detection from missing it were less cogent than, in such circumstances, it would of necessity be.

9. There is another consideration, which strongly recommends a social prison discipline. It is this: Power in a society, by being under the direction of virtue, naturally increases, and has a necessary tendency to prevail over opposite power, not under such direction, just as power, by being under the direction of reason, has a tendency to prevail over brute force. Union, and more especially virtuous union, is power. Men can do jointly what they cannot do singly. The union of minds and hands works wonders. Men become efficient in proportion as they concentrate their powers. Joint effort conquers nature, hews through mountains, rears pyramids, dikes the ocean. Man left to himself, living without a fellow, if he could so live, would be one of the weakest of creatures. Associated with his kind, he gains dominion over the strongest animals, over the earth and the sea; and, by his growing knowledge, due almost wholly to association, he may be said to obtain a kind of property in the universe.

Nor is this all. Men not only accumulate power by union, but they thereby gain warmth and earnestness, which raises and intensifies

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power. The heart is kindled by association. An electric communication is established between those who are brought into contact and are bound to each other by common labors and interests. Man droops in solitude; no sound excites him like the voice of his fellow-man. The mere sight of a human countenance, brightened with generous emotion, gives new strength to do or suffer. Union not only brings into play forces which before existed, and which were ineffectual through separation, but, by the interest and feeling which it arouses, it becomes a creative principle, calls forth new forces, and gives the mind a consciousness of powers which would otherwise have remained unknown.

A current objection to the system of discipline here proposed and advocated is the alleged necessary demoralization attending the association of prisoners together. It is readily admitted that if only their worst feelings are called out, as is commonly the case under existing systems, their association cannot but aggravate the evil. But if, instead, we will bring their better impulses into play—and it is quite easy to do this under proper combinations, without sacrificing any portion of reasonable punishment—prisoners will be found just like other men. They are born social beings, are so fashioned by the hand of the Creator, and it is in society, not in seclusion from it, in the society of their equals, not in exclusive contact with superiors, that their best qualities will infallibly be called out. To say that men can be best fitted to return to society in solitude, or in the company only of their superiors, without any other social relations whatever than that of prisoner to jailer, seems as great a solecism as it would be to say that admirals may be best taught their special duties by being kept on shore, or artists by being debarred the use of their implements. Both instruction and practice must go to fit a man to meet the difficulties and temptations of social life; and if either is omitted, the discharged prisoner must inevitably go lame and halt. Like handcuffs and strait-jackets, separation has a good special application, and, as a medicine, is excellent for certain phases of moral disease; but it is no more fit for habitual diet than senna or ipecacuanha. It is alleged that it facilitates the return of prisoners outside by lessening the chances of recognition; and in aid of this property in it, masks have been introduced into many prisons further to conceal the person. But it is a delusion to suppose that such a device can ordinarily be successful; prisoners rarely fail to know and recognize each other. Besides, is it really desirable or wise to try to qualify men to go forth into the world with a lie in their mouth? Would it not be better to make prisons so improving, and the principles on which men are discharged from them necessarily bear such testimony to their amended character, that the prejudice against receiving them when discharged will gradually fade away, and cease to be an obstacle to their ultimate advancement?

IX. *It is the living soul which a true system of prison discipline will seek to win, not the inert and obedient body; hence minute regulations should not be greatly valued, and the multiplication of conventional or artificial offenses is to be sedulously avoided.*

To make the mark system consistent with itself, and carry out the principles on which it is founded, the head of a penitentiary establishment under it must propose to himself a purely benevolent object, and repudiate everything which is merely vindictive, as well as what is called exemplary. He will not by so doing lose the little benefit that may be derived from any example without principle; but he will raise the character of the example that he sets by making it one of successful reform. Whenever he is in doubt he must refer to the ordinary opera-

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tions of society as a guide; and, in particular, he must study by every means to create a representation of its social ties by diffusing common interests and responsibilities, extending and subdividing these as on experience he shall find best. He must set no store by minute regulation, and carefully avoid multiplying conventional offenses. He must also encourage men to love labor, by assisting it with all the usual aids and appliances to make it productive. There cannot be a greater mistake than to make penal labor necessarily rude and ineffective. His object must be thus to persuade, not coerce; to create the good will, and reward, without commanding, the good deed. It is the living soul, and not merely the inert and obedient body that he must seek to gain; and precisely as he attaches value to the latter he will probably be indifferent to the former; and, conversely, as he comprehends the worth of the former he will appreciate at only its just value the minutely scrupulous eye-service which is often rendered by the worst men. Of his general success on these principles he need entertain no doubt; and the more confident he is on this head the better, for such confidence will make him inventive of the methods proper to the attainment of his end.

In dealing with prisoners we habitually make a variety of mistakes, to which, nevertheless, professed disciplinarians are all zealously attached. We draw no proper distinction between moral and merely conventional offenses. By minute regulation we multiply the number of these latter, and at the same time exaggerate their importance. We thus wear out the spirits of our men, and exhaust their feelings of submission and obedience by incessant demands upon them for pure frivolities. We also sear their conscience by familiarizing them in this way with petty transgression. We trust altogether to force to compass our ends. We seek to bend men like osiers, or to cast them, as we would dough, in stone molds. We allow the higher principles of human nature to lie dormant in our prisoners; we afford no scope for their exercise; we make our sole appeal to immediate and absolute submission; we give no charge to men of their own destiny; we keep them as automata in our hands; we treat them as such mainly, if not wholly; and having thus done everything in our power to weaken them, we look to make up for our blunders afterward by placing them in "favorable circumstances." Is this a school of virtue? Is not the whole process an absurdity? *Nitimur in adversum*—a struggle against opposing forces—is the real road to improvement; and we give our prisoners neither opportunity for making this manly struggle, nor the chance of acquiring energy and independence of character through the battle. We make them look and act to order while in our hands, and we wonder and cry out at their perverseness, when they afterward fall, either through the weakness which we have ourselves induced, or from the want of strength which we have failed to impart.

The system devised by Maconochie avoids these errors, without falling into others of any great gravity. It may be improved in its details, as it has been by Sir Walter Crofton, but its fundamental principles cannot be advantageously dispensed with. It grants no weak or unmeaning indulgences, but it seeks to gain soul as well as body; to influence and to mold, not merely to coerce. It draws the line of duty under the guidance of religion and morality, not of conventional regulation. It seeks to punish criminals by placing them in a position of severe adversity, from which nothing but long-sustained effort and self-denial can extricate them; but it does not aggravate their position by unworthy scorn, hatred, or contempt; on the contrary, it respects our common nature, however fallen or diseased. It does not encourage a man ap-

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proaching his freedom by an abatement of task or improvement of diet, the low rewards of existing low systems, which flatter the spirit of self-indulgence, that leads most criminals to their first fall; but it at once proves, stimulates, and cheers him on by an ever-increasing scope of free agency, with motives to guide it, yet not unmingled with difficulty to resist its temptations. Seeking thus to train men for discharge into any circumstances, it does not distrust its power to qualify them for even the most difficult; but it seeks this end by strengthening the will, not by fettering it, believing that thus only can men be trained, whether in free society or in prison, who will be able to meet successfully the trials and difficulties of active life; for to aim at virtue by fencing it from without, instead of by strengthening it from within, is as perfect an exemplification as can well be conceived of dropping the substance to pursue its shadow. We cannot have worse success by seeking to gain the minds of our prisoners than we have had by aiming merely to fetter their bodies; and, on the other hand, we may, by using a more rational method, solve a problem which all concur in pronouncing difficult, and which the dispassionate reasoner can scarcely avoid pronouncing incapable, on present principles, of being solved at all, viz, how we may so organize public punishment as to check crime and yet recover criminals.

X. *The prisoner's self-respect should be cultivated to the utmost; everything tending to destroy this sentiment should be avoided; all unnecessary humiliation of the prisoner is of evil tendency and effect.*

The principle should be of constant and of universal application in prisons, not to degrade further those who come to them already degraded by their crimes. Self-respect is one of the most powerful sentiments of the human mind, for the reason that it is the most personal; and he who will not condescend in some degree, according to circumstances, to flatter it, will never attain his object by any series of chastisements, the effect of harsh treatment being to irritate rather than to correct, and thus to turn from reform instead of attracting to it.

Stripes, the imposition of a degrading dress, and everything else tending to destroy men's self-respect, should be abolished, and instead, the punishment for prison offenses should be the withholding of some privilege to which the prisoner would otherwise be entitled, or the forfeiture of a proportion, suited to the offense, of the progress already made toward liberation, with or without a period of stricter imprisonment, as the case may be. There is no greater mistake in the whole compass of penal discipline—fertile as it is in such—than its studied imposition of degradation as a portion of the punishment. It destroys every better impulse. But, on the contrary, no imposition would be so improving, none so favorable to the cultivation of prudence, self-command, self-respect, and a proper deference and respect for others, as that of making every deviation from the required line of right bear on ultimate release. Such a punishment would be as the drop of water that wears away the hardest stone; and without the possibility, under suitable regulations, of being ever wantonly cruel, would yet speedily subdue even the most refractory.

Captain Maconochie assures us that, while he did not neglect the object of *punishment* in his various arrangements on Norfolk Island, he sought it within the limits assigned both by the letter and the spirit of the law, not by excesses of authority and of suffering beyond them. The law imposing imprisonment and hard labor he executed to the fullest extent. But, while every one of his men was required to perform the government task allotted him, without abatement, he was saved from all

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unnecessary humiliation, and was encouraged to look to his own steady efforts for improved position while in prison and for his ultimate liberation from it. And this, he avers, not the efforts of an individual, zealous as they certainly were, was the real secret of the altered aspect of Norfolk Island in his time from what either preceded or followed it. He sought, by all practicable means, to recover the men's self-respect, to reinstate their manhood, to gain their own wills toward their reform, to visit moral offenses severely, but to reduce the number of those that were purely conventional, to mitigate the penalties attached to these, and thus gradually to awaken better and more manly feelings among them. He believed that needless humiliation, which it is the fashion to impose on prisoners over and above what is required by law, does more moral injury than all other incidents put together of ordinary prison life. Its tendency is to crush the weak, irritate the strong, and indispose all to submission and reform. It is, in truth, neither intended by the law, nor consistent with the professions made by lawgivers when framing them. It is merely one infirmity of human nature, one exhibition of its worst qualities, aggravating others. It is trampling where we ought to raise, and is therefore at once unchristian and impolitic.

No one will ever beneficially influence prisoners, or indeed any others, who does not cherish and seek to strengthen in their breasts manly sentiment, which is the religion of uncultivated minds, and perfectly compatible with their most improved aspirations.

XI. *Moral forces should be relied upon both for discipline and reformation in prisons, with as little resort to physical force as may be; the military type of discipline, particularly, is not suited to the nature and design of public punishment.*

A broad distinction is to be made between *physical apparatus* and *moral appliances* in prison management. By physical apparatus is to be understood is intended merely to coerce, regardless whether it persuades or not; by moral appliances is to be understood whatever offers a choice, and thus strengthens the mind even when guiding it. An invincible necessity, however produced, may, in this sense, be called physical; it may be caused by *moral* means, as intimidation, without affecting its real character; and, on the other hand, a *moral* appliance has frequently a tangible *physical* form, without losing its proper character. The essential distinction—and it is a very important one—is that between *force* and *persuasion*, the fitting of the body and the gaining of the will. Whatever conduces to the latter may thus have place in a system of moral influence, but that place will be more or less high, according to its more or less directly persuasive or coercive character.

The chief influence at present relied on, both for preventing crime and weaning from it, is fear. Fear is no doubt among the most active impulses of the human mind; we all, in a degree, daily experience it; and it ought therefore to have a place, and even a large place, in every agency directed to repress crime. Yet if we consider it dispassionately and philosophically, there is not an impulse of any kind whatever, whether love, hatred, desire, covetousness—be it what it may—that does not continually overcome it even in the most timid. Is it rational, is it feasible, to rest our chief confidence on so feeble an agency in the endeavor to repress crime, to which the promptings usually proceed from the strongest feelings of the human breast? It is unworthy the intelligence of our age to state such a proposition. There needs to be introduced into prison discipline a higher aim, enforcing management that seeks to gain the wills of prisoners, and not merely to confine and macerate their bodies. We must train them to become again virtuous

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freemen, not merely for a time reduce them to the position of well-ordered bondmen, taught the virtues of a state of slavery—obedience, submission, punctuality, order, and the like—but necessarily with these a large admixture of its vices also—concealed but cherished resentment, duplicity, evasion, a thicker cloak of hypocrisy, which, however, only conceals with a little more art the continued rottenness within.

We too commonly consider criminals as the representatives of crime, and pharasaically fancy that, in being harsh to them, we show our detestation of it. If we would consider them rather as its first and saddest victims, to be pitied as well as blamed—to be pitied all the more for being bankrupt in virtue as well as in means, and if we would earnestly seek to raise them from this position, not indeed by pernicious indulgence, but by a judicious course of adversity and instruction, developing their manly and stimulating their moral nature; if we would do all this, we would much more correctly appreciate the whole subject, much better understand our own duties in relation to it, much better exhibit a Christian spirit to our fellow-men, and much more successfully repress crime. Only let us try—try in good faith and with good will, not halting between two principles, but acting steadily and energetically on one. The result would not long be doubtful, and the greatest moral problem of our day would be at length satisfactorily solved.

All past systems of prison discipline have been, in the main, different modifications of *force*. Whether separation, or silence, or enforced labor, or artificial privation, or whatever else may have been the leading principle, still, authority has been their chief, if not the exclusive reliance; and, so far as reforming criminals is concerned, they have all signally failed. Let *organized persuasion* now have a trial—not coaxing, not coddling, but persuasion with such forces behind it, resulting from a judicious application of motives, as, while leaving the will free, will yet, by a sort of moral necessity, determine it to a right choice.

It was charged against Maconochie that the only secret of his management on Norfolk Island was indulgence, and that his prisoners behaved well because they had all their own way. They little know prisoners who say this. Mere weakness never yet guided or controlled such men. They behaved well with him because they were reasoned with, not bullied; because they were sought to be raised, not crushed; *because they had an interest in their own good conduct*; because the public sentiment of the establishment was at once a restraining and an impelling force; and because they knew that if, notwithstanding, they behaved ill, they would be otherwise vigorously repressed.

It was objected by a writer in the Edinburgh Review that prisoners are selfish, and he argued that the way to cure them is to urge their penal sufferings to the maximum, and so make them feel that "the wages of sin is death;" and he endeavors to illustrate the analogy of such treatment to the doings of the supreme intelligence in the effects of continued intemperance on the body of the drunkard. But what is the real analogy of this case? As long as a drunkard continues to besot himself, his bodily suffering and decay increase; but if he turn from his infatuation, after the pain of the first effort is over he gains health and ease day by day. Just so it is with criminals under a moral as distinguished from a coercive *régime*. They come in selfish—desirous only of ease, evasion, and self-indulgence, but, under the strong impulse afforded by the system, they gradually become social, generous, active, and well-purposed throughout. "They wash and are cleansed." Religiously they may not be converted. But even in this respect many

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come, through their temporal good, to see and embrace their spiritual; and it is beyond all controversy that a right agency will make improved social agents of even the worst; or if this be considered doubtful, it will be time enough to pronounce authoritatively to this effect when a right agency shall have been fairly tried.

The coercive system of managing men appears to be an essentially vicious one, insomuch that precisely where most perfect, it will be found ultimately most unsuccessful. Mind can be gained only by appealing to mind. Fettering the body is even directly opposed to this. It has its immediate and apparent advantages no doubt; but they are too dearly purchased. If we will actively employ our prisoners, and by suitable means cultivate in them the daily practice of manly and social virtue, they will protect themselves from degrading vices much better than we can protect them by walls and bolts. And the moral triumph thus achieved will be as improving and strengthening to them as the physical triumph, even when achieved, is humiliating and enfeebling.

An extravagant degree of importance has been and is attached to the mere construction of prisons, and attention is drawn off by this from what is much more important. A good system in a bad prison is far better than a bad system in a good prison; and as no one ever heard of a regiment fluctuating according to the construction of a barrack, so neither is there any sound reason for that of prisoners being more dependent on the construction of their prison. Discipline is a science of moral much more than of physical arrangement; and in this department alone is this consideration utterly disregarded. In all other directions influence has in great part superseded force; here only has force superseded influence almost altogether; and the natural result—want of success—has followed. We cannot have worse success by seeking to gain the minds of our prisoners than has hitherto resulted from seeking merely to fetter their bodies.

Little effort is made, generally, to call the better impulses of prisoners into habitual exercise, while much in their treatment tends to keep the worse in activity. Further punishment is denounced if they misbehave; but no fixed encouragements are held out for sustained good conduct. Their more abject feelings are thus kept habitually active, while their more manly ones are allowed to sleep. Consequently, the powers and impulses most likely, on their discharge, to keep them from again falling, are impaired by disuse, while those of concealment and evasion, the sources, probably, of their first error, are continually being sharpened. Their character being thus modified, and themselves subjected to increased temptation on discharge, while their powers of resistance are necessarily weakened, the expression, "once a prisoner, always a prisoner," has become proverbial, but in a great degree through the training to which criminals in prison are thus habitually subjected.

The ability on the part of the prisoner to better his condition while in prison—in other words, a regulated self-interest—is one of the mightiest and healthiest moral forces that can be introduced into prison management. Captain Maconochie, in one of his publications, refers to the remarkable experiment in prison discipline of Colonel Montesinos, in Valencia, Spain, and makes the following extract from one of his reports:

The establishment of one workshop, and the difficulties experienced in managing it, showed me both how to introduce more, and how to enlarge those already in operation; and I thus further acquired the intimate conviction that without the *stimulus* of some personal advantage accruing to themselves from their labor, it is difficult to obtain work even from the already skilled, and almost impossible to get the unskilled to learn. Repeated experiments convinced me of the practical lesson involved in this maxim of social economy, and that what neither severity of punishments nor constancy

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in inflicting them could exact, the slightest personal interest would obtain. In different ways, therefore, during my command, I have applied this powerful stimulant; and the excellent results it has always yielded, and the powerful germs of reform which are constantly developed under its influence, have at length fully convinced me that the most inefficacious of all methods in a prison, the most pernicious and fatal to every chance of reform, are punishments carried to the length of harshness. Moreover, the love of labor cannot be imparted by violent means, but rather by encouragement and persuasion; and although it is quite possible to obtain a given amount of work from prisoners by the aid of the stick, yet the consequence is, necessarily, aversion to an employment which involves so many penalties, and of which such a bitter recollection must always be preserved. The moral object of penal establishments is thus also, in effect, defeated, which should be not so much to inflict pain as to correct—to receive men idle and ill-intentioned, and return them to society, if possible, honest and industrious citizens. It was not till after making many experiments of severity that I came firmly to this conclusion; but ultimately I made the principle the basis of all my operations on the minds of the prisoners, and the extraordinarily small number of recommittals to my prison, and the excellent health and perfect state of submission in which those confined in it have always been kept, seem to me to leave no doubt of its soundness.

The comment of our author on these statements is:

The most depraved human nature, the lowest, the most sunk, has yet elasticity sufficient to rise at the call of a regulated self-interest, and can thence be made gradually to ascend under the influence of higher motives.

One of the moral forces most confidently relied upon by Captain Maconochie in the management of prisoners is the law of kindness. The kindness proposed, however, is neither morbid nor mawkish, seeking merely to alleviate the immediate suffering of prisoners, which they have deserved, and ought to undergo. It is rather a manly, rational, Christian, prudent, forecasting kindness, seeking to raise them again. Such a spirit introduced into our prisons would speedily work wonders, both on the character of prisoners and on the general movement of crime. This spirit once there, the principle admitted, the aspiration after moral improvement recognized by the officers as a duty, it would prove inventive in their hands. It would *find* or *make* means to accomplish the reform of their prisoners, and when driven from one agency, it would have recourse to others; it *would* not be wholly defeated. Further, such a spirit once having found a lodgment in the breasts of prison officers, and constantly working itself out, would not long be confined within the prison walls, but would follow those who had felt its beneficent power while in bondage into society, after their discharge, and would thus tend prodigiously to repress crime.

What a change, what a revolution we might say, would the general possession and manifestation of such a spirit on the part of prison officers make in the tone and temper in which prisoners are now treated in prison! This is at present supercilious, in many cases even contemptuous or denunciatory, whereas it should be rather that in which patients are received into a hospital. The hatefulness of the crime that has been committed should be, indeed, freely expressed; on this head there should be no compromise; but apart from this the criminal should be sincerely regarded and studiously treated as an object of compassion, sadly fallen, indeed, but yet recoverable, and sent to prison to be recovered. A tone of hopefulness for his case should thus be maintained, and of confidence that, when put in the right way, he will be manly enough to abide in it. This idea of manliness, as attached to virtue, and of cowardice and abjectness, as shown in yielding to vice, should be especially insisted on. The greatest benefit has been seen to result from it in dealing with rough and fallen natures. It is an idea that comes home to many bosoms, otherwise hard to be permanently impressed, and to whom, on the other hand, any approach to whining is distasteful and an object of scoffing.

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And it deserves to be noted here, in passing, that a liberal application of the law of kindness to prisoners is not incompatible with a calm, steady, resolute discipline. Tenderness may be fitly and successfully blended with justice in the treatment of them. It is not a just rigor against which the prisoner rebels, for that may be wise and kind; it is against capricious harshness, which is cruel and irritating, because it lacks the element of equity. Criminals are not much accustomed to kind treatment, and therefore they are the more readily touched by it. Show them that you have humanity, that you feel a genuine sympathy, and their gratitude is at once awakened. This principle appears to keep a lingering hold of our nature, even in the last and lowest degree of human wickedness. When all other generous principles are gone, this still survives, and shows itself even in the most hackneyed and hardened malefactors. There is, somehow and somewhere, a softer part about them, which will give way to the demonstrations of tenderness. This one ingredient of a better character, this one germ of a dormant virtue, is still found to survive the destruction of all the others, insomuch that, fallen as a brother may be from the moralities which at one time adorned him, the manifested good-will of his fellowmen still carries a charm and an influence along with it; and in this there lies a regenerative and redemptive operation, which no degradation and no depravity can extinguish.

Moral power over his prisoners was sought by Captain Maconochie, and attained, too, in a very high degree, by frequent, frank, kindly, judicious conversations with them. On this point the captain says:

I very early adopted, in the penal colonies, two practices, to which I owed much of the minute information that I gradually acquired about prisoners, and much of the influence that I gained over them. One was that of conversing with them all very freely, and encouraging them to speak to me in like manner, and to give me, without hesitation or reserve, their views and sentiments on whatever was our subject. By this means I was enabled to sound their impressions and the sources of them much more deeply than would otherwise have been possible. I derived infinite advantage, in the beginning especially, from this practice. My second habit was that, whenever a prisoner was brought before me judicially, especially for a moral, as distinguished from a mere disciplinary or conventional offense, I always strictly interrogated him about his early youth and training, his parents, the lessons they had taught him, the example they had set him, and so forth. My immediate object was to call up the associations connected with the days when he was yet comparatively innocent, and thus endeavor to revive in him the impulses which guided his conduct before he became corrupted and seared by the scenes he had subsequently gone through. I was often much struck by the manifestations of tenderness and regret that passed before me; yet distressed, too, by their too often fleeting character. Still, I had reason to think that they did some good, as recurring to the men's minds afterward, and insensibly influencing their conduct. They were sometimes quoted to me months afterward by prisoners as having had that effect on themselves; but at the moment I certainly was not always convinced of this beneficial effect. At times I had even cause to suspect artifice in the exhibition of them.

Again:

I carried constantly about me a little book, in which the names and characters of all were entered, by which I was enabled at all times to address them according to their occupations and general demeanor. If they preferred applications to me, as was common, I would immediately reply to them; and talking freely, almost familiarly, with all, I could both probe their characters and insinuate much useful instruction, especially among the leaders of them, for I knew that if they were gained, the others would follow; while, on the other hand, this process could not be reversed. I thus especially pressed a distinction, which I was anxious to draw, between what I termed (by comparison) manly offenses and unmanly, including especially among these latter grossness and petty thefts; and I found generally that I could by no other means so effectually discountenance such faults as by thus pouring contempt on them. I encouraged all to address me with freedom, and would not even listen to a man unless he stood erect and spoke to me like one. I even said to them frequently that I would rather have a man insolent to me than cringing; and I encouraged all, if they wanted anything, to come to me themselves with their requests, instead of seeking to make

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friends among those more immediately about me. To facilitate this, I walked and rode about the island generally quite alone, and rather invited than discouraged conversation with any who came in contact with me.

For every really useful purpose, the discipline in our prisons is at present far too military in its whole conception. The objects of military and prison discipline are diametrically opposite; and yet the latter is very much modeled on the former. The object of military discipline is to train men to act together; that of prison discipline, when rightly viewed, is to prepare them advantageously to separate, and to act each for himself. The purpose of the first is to absorb individuality, to make each man, as it were, a portion of a well-adjusted machine in the hands of a skilled regulator. Its aim is to teach all to look to orders only, not principles, as the guides of their actions. It is precisely the unhappy result of this spirit in existing systems of prison discipline that produces its injurious effect, and shows the false principles on which they are founded. Were it the express purpose of society to destroy the moral strength of prisoners, and to utterly unfit them to regain a place among free and self-acting men, the means could not be more perfectly adapted to the end.*

The aim is to reform these criminals. To compass their reformation we must quit the military type, and seek a more suitable arrangement. A military barrack, despite the presumed original innocence of its inmates, and a high point of honor studiously cultivated in it—for which no substitute can be found in a prison—yet notoriously demoralizes, and can it be deemed possible that a similar organization can reclaim criminals? Instead of this, we must carefully copy the incidents of that frugal, honest, self-denying, and laborious poverty, to which we wish to restore our criminals, and for which, therefore, it should be our earnest endeavor to qualify them. No more hot meals without previous exertion to earn them; no more undervaluing of time, nor consequent *stimulus* to skulking or evasion; no more interest but in industry; no indulgences save those purchased by exertion and self-command; no progress toward liberty except through diligence in work, and the exhibition of every other description of good conduct, proved not by words but by acts, not by lip submission, but by active, strenuous effort in the fulfillment of all duty. It is thus, and thus only, that the stern school of punishment would be made really reformatory.

The military type must therefore be abolished in prison management, and a discipline by moral forces substituted in its place. The objects of military and prison discipline, being directly opposed to each other, cannot be pursued by the same road. The one is meant to train men to act together, the other to prepare them to act separately. The one relies upon force, which never yet created virtue; the other on motives, the approved agency for obtaining moral ends. The special object of the one is to suppress individual character, and reduce all to component parts of a compact machine; that of the other is to develop and strengthen individual character, and, by instilling right principles, to encourage and enable it to act on these independently.

* The Rev. Mr. Luckey, late chaplain of Sing Sing prison, used to relate the case of a man who, being discharged after a long imprisonment, was unable to walk otherwise than after the fashion of the lock-step; and, accordingly, he would invariably get behind the person with whom he was walking, and laying his hand on his shoulder, tread with the greatest precision in his steps. One day, walking in the streets of New York with a brother clergyman, accompanied by this man, who was following himself in the manner described, and feeling, as he expressed it, "a little wicked," he managed to slip from before the ex-convict and place him behind his companion, to the great consternation and fright of the latter, and his own abundant amusement.

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Upon the whole, the questions which heretofore have chiefly occupied public attention—questions of separation, association, kinds and methods of labor, and the like—are but the husk; the kernel is found in the question, "What shall be the spirit, what the moral apparatus, with which punishment shall be inflicted under any system?" External circumstances have had far too much attention. On the principles of the mark system, or, more generally, of *systematized persuasion* in any form, better results are likely to be obtained in the most unfavorable circumstances than any modification of force will give in the most favorable. And no great advance seems probable or possible in the application of penal science till this truth is seen, acknowledged, embraced, and acted on.

XII. *Unsuitable indulgence in prison management is as pernicious as unsuitable severity. The true principle is, to place the prisoner in a position of stern adversity, from which he must work his way out by his own exertions—by diligent labor and a constant course of voluntary self-command and self-denial.*

The writer in the Edinburgh Review, cited under the last head, objects to Captain Maconochie's discipline as a system of indulgence and pampering; but certainly there is nothing in it to warrant such a representation. On the contrary, it proposes to place criminals in a state of utter poverty, destitution, and bondage, from which nothing but their own steady, unflinching, persevering effort can extricate them. They are to be at the bottom of a well, with a ladder provided by which they may ascend if they will, but without any bolstering or dragging up by other than their own exertions. If they even halt, the effect is to make them go downward again, for their maintenance from day to day is to be charged to them. Are there not here, then, sufficient elements of suffering to produce a deterring effect? And yet everything is strongly conducive to reform. Why, therefore, go further? Why introduce, in addition, chains, and dungeons, and factitious offenses, and all the other apparatus of slavery, so much clung to in ordinary prison discipline, yet so injurious to both officers and men? Why stigmatize that system as overindulgent which merely rejects these, while substituting, at the same time, conditions far harder than they to a degraded mind? A fallen spirit can put up with a little more humiliation, a little more contumely, a few more harsh restrictions, which there is always a contemplated pleasure in evading or resisting; but to set his shoulder to the wheel, to struggle steadily out of his position, to command his temper, his appetites, his self-indulgent propensities—and all voluntarily, all from an inward impulse stimulated by a moral necessity—this is a far harder imposition.

In the same spirit the reviewer quotes all his intellectual apparatus as though they were intended as mere *solatia*, mere devices to while away time. But he introduced them for the express purpose of awakening, stimulating, and keeping the mind active, as well as the body, storing it, at the same time, with better thoughts and images than the impure and disgusting ones otherwise most familiar to prisoners. And in this light they cannot, surely, be too highly valued. It is in the intervals of entire repose, of an absolute want of occupation, which, in ordinary prison management, are allowed to alternate with severe bodily toil, that such men corrupt each other. His music, readings, schools, novels, horticulture, and other like machinery, kept out (as they were designed to) many a devil, and let some angels in.

Reform by adversity, deter by improving criminals—such is the fundamental precept of Maconochie's system; and it cannot be justly charged against it that it is either weak or mawkish. On the contrary, it is ob-

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vious that a much firmer, more consistent, and even more formidable and deterring system may be founded on this principle than on arbitrary, vindictive punishment. It is substance, not forms, at which it aims. It leaves little to administration, and requires higher sacrifices than lip professions, or mere external, and often hypocritical, submission and obedience.

As a rule, reform can be attained only through a course of severe training. It is in well-devised adversity that all the manly virtues are generated. "Sweet are its uses," therefore, to prisoners; though they, like others, would gladly shun its school. It is a consideration here of no little force, that when suffering is inflicted with a benevolent aim the very weakest will enforce it. And all the ends of public punishment may be thus more surely gained. We reform and deter at the same time and by the same process. The judicious pursuit of the first object will give us also the second.

Beyond the restrictions necessary for the order and safe custody of prisoners, every part of their treatment should be directed exclusively to their improvement. Unless this position be distinctly and steadily acted upon, we shall be liable to be constantly drawn aside to the infliction of mere hardship and suffering, which will be quite unnecessary, for if improvement be but wisely sought, there will be enough of these, and even far more than are at present imposed. In truth, nothing could be devised more distasteful to the habitually idle, dissolute, and criminal, than an imposed necessity to be, for a length of time, orderly, steady, industrious, and otherwise self-restrained, under penalty of prolonging their detention. The necessity of thus even *electing* to be well-conducted, of choosing to *make effort*, and not merely consenting to *endure*, would be more felt by most prisoners than a much greater amount of physical hardship, incurred under other conditions; for this would make it evident that their wills were subdued, as well as their persons, and bravado, then or afterward, would be out of the question.

The true principle, then, is, that a man incurring punishment should, like one who has fallen into a pit, be required to *struggle* out of it, and not be allowed, as at present, simply to *endure* out of it. In the one case, his more active and better qualities are called into play, and thereby necessarily improved; in the other they are all put to sleep, or, to change the figure, they are consumed by rust, if, indeed, others most pernicious do not supply their place.

XIII. *The education of prisoners is a matter of primary importance as a means of reforming them.*

To develop the minds and powers of prisoners, schools should be established in all penal institutions; or, rather, such an establishment should be one vast school, in which everything is made subservient to instruction in some shape, moral, religious, intellectual, or industrial. Libraries, museums, and all other appliances calculated to excite and gratify a rational curiosity, should be liberally furnished. But, except in the early stages, when the first start is to be given, and when the treatment should be more like that of a hospital, in which whatever is most suitable is given without regard to expense, Captain Maconochie would not have the benefit of these aids extended to any gratuitously. He would liberally reward proficiency where it did occur, but he would, in every case, require a sacrifice of marks to obtain the means of acquiring it. These means would be thus valued, and the analogy of ordinary society would be still preserved, a rule of supreme importance in a reformatory prison discipline. The most active means should be taken, the most assiduous efforts made, to expel old thoughts from the minds

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of prisoners, and supply them with new materials for reflection. The captain devised a curious arrangement in aid of this design. In a separate prison, which he caused to be built on Norfolk Island, an apartment was contrived, in which a reader's voice could be heard in twelve contiguous cells; and, during the greater part of each day, some description or other of reading aloud was maintained in it. By closing a sliding panel in his door, each prisoner could be absolutely alone, if he wished it, while, by opening it, he was again within hearing of some entertaining and instructive reading. The effect, in a great degree, even through this power of choice, was most beneficial. It is vain to talk of ignorant, inert, and corrupt minds profiting by their own unassisted reflections. They sleep over these, or do worse; and they cannot be *compelled* to do better, for what is forced on them soon becomes nauseous, and hence unprofitable. Really to serve them, their occupations and progress must be made immediately profitable, and their time thus be rendered important to themselves. They must be assailed from without, also, by continuous, rather than by vehement intermitting efforts; and, being for the most part either adults, or very precocious, they cannot be treated with permanent advantage as mere school children. Any progress they so make will be found on trial deceptive, disappearing with the machinery used to produce it.

Captain Maconochie, in the management of Norfolk Island, was most anxious to encourage education among his men; however, as he refused them rations, so neither would he give them schooling gratuitously, but compelled them to yield marks to acquire it. He balanced this by visiting the schools regularly on the last Saturday of every month, and inspecting them with some degree of formality, examining the men, and distributing prizes, in marks, for attention and proficiency; so that, with diligence and assiduity, school was rather a source of gain than expenditure, though the idler found it only the latter. Altogether the plan worked admirably. He never saw adult schools make such rapid progress or be carried on with greater spirit. He further, on his Saturday visitations, gave prizes, in marks, to the educated prisoners employed to read aloud in the jail, hospitals, dormitories, and larger huts, from which practice of loud readings, very great advantages were derived. It enlarged the minds of even the most ignorant and stupid; and, by showing them the use and value of being able to read, it invited them to diligence in acquiring the power.

XIV. *Religious instruction and culture are all-important as a means of reforming criminals.*

Among other agencies for the recovery of the prisoners on Norfolk Island, religious instruction and exhortation occupied much of our author's thoughts, and not a little of his time and effort personally. Besides visiting almost daily the jails and hospitals, and supplying them with books and readers—the latter educated prisoners, mostly infirm and unable to do any work besides this, (and it was marvelous how much they improved both themselves and their companions by this exercise)—he established adult schools; furnished these also with books and other intellectual apparatus; employed even his own family tutor to teach and to preach in them; held monthly examinations, at which he distributed prizes to the meritorious; and, in addition to all these efforts, every Sunday afternoon for four years, after attending morning service with the prisoners on the settlement, he went regularly, attended by some of his family, to a distant station in the bush, where he read the evening service, with a sermon for the benefit of the shepherds and others whose

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avocations made it difficult for them to attend punctually on the service at the settlement. Further, he built two churches in the settlement during his incumbency, one Protestant, the other Roman Catholic. Previous to his coming, though the island had been fifteen years a penal settlement, there had not been even one, and the services had been read to the prisoners, often by one of themselves, in a most slovenly and irregular manner, in barns and mess-rooms, as they could be hastily and very imperfectly arranged for the purpose. His church edifices, though plain, were, at least, convenient, and never used in any other way; and the moral benefit that accrued from making the religious observances thus decent, and, in aspect at least, reverential, was prodigious. He was assisted in all these efforts by a moderately strong clerical staff, consisting of two principal chaplains, Protestant and Roman Catholic, both able, zealous, and even eloquent men, and by two Catholic and Protestant catechists. The men were all (he did not doubt) morally and socially improved; the tone of feeling, action, and still more, of opinion, among them was sensibly raised; vice of all kinds, as well as theft, was discountenanced; scurrilous and reproachful epithets addressed to each other, which had been previously common, became comparatively rare and even unpopular; evidence in all cases of transgression was much more easily obtained; and there was no longer, as it were, a conspiracy among the men on all occasions to defeat the ends of justice. But the captain was constrained to acknowledge that he did not think that any great part of this general and marked improvement proceeded from religious motives, though it was clearly the result of religious teaching. Few, he conceived, could be considered as religiously impressed even in thought, and fewer still, in difficult circumstances, evinced self-denial as the result of religious impression. Still, after citing a variety of illustrative examples, Captain Maconochie adds:

> From these anecdotes, to which more might be added, it appeared to the writer that some important lessons might be deduced, bearing both on education and prison discipline. They illustrate the extreme importance, as regards recovery from crime, of extending as widely as possible among our population early devotional teaching, directed to stimulating conscientiousness and instilling an early sense of personal responsibility. It did not appear to me of much importance with what specific code of theology this was combined, provided it was instilled early, and thus, almost of necessity, dwelt more on the points in which nearly all agree than on those in which some differ. In this case, however, the impression may have been overborne for a time under the influence of youthful levity, strong temptation, or other adverse circumstances; it was easily renewed, especially if presented under the forms with which it was originally connected. On the other hand, if youth, the season when the sentiments are most excitable and retain impressions made on them with the greatest tenacity, has once been passed without any such feelings being kindled, it seemed almost impossible to awaken them afterward in mature years.

In this connection may be fitly introduced what Captain Maconochie says in regard to the burial of deceased prisoners. Very soon after his arrival at the island he set himself to improve the prisoners' funerals, previously most disreputable. The attention of prisoners to their sick companions, he avers, is usually very striking; and their emotion, on occasion of a death, far exceeds what is usually seen in either army or navy. The feeling exhibited is not, he thinks, the expression of fear, but rather of sympathy with one who has passed from among them, and from their trials to another audit. He often observed this thought in the minds of otherwise rather hardened men, and in no case did he ever witness a trace of that disgusting levity with which death is sometimes adverted to in military and even in high civil society. Before he went to Norfolk Island only a limited number, not above twelve, were allowed to attend any funeral; and no head-stone was permitted to be erected at

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a prisoner's grave. In the belief that a high moral benefit would be the result of an opposite course, he abrogated both these regulations. Two or three hundred men would thus often accompany an interment, all dressed in their best, and walking most respectably in files together; and a decorum, modesty, and even taste (occasionally) were exhibited in their headstones which were really wonderful. He speaks of one which greatly impressed him. It was a low, humble stone over an old man, with the words, "The weary are at rest" above, and the name and date beneath. It seemed to him very touching, and at the same time highly characteristic. It expressed that *tædium vitæ*—weariness of life—which elderly prisoners, who especially feel the discomforts of their position, and have outlived their relish for its palliations, almost always testify. The prison burying-ground was in a somewhat romantic spot, picturesquely placed between a high cliff on one side and a portion of sea-beach on the other, on the bar fronting which a heavy surf broke, even in the calmest weather. A considerable clump of trees, of stunted growth, because much beaten by the prevailing sea-breeze, and hanging low, in consequence, over the rear portion of the ground, contributed both to sequester and, with its associations, to give the place a funereal character. A broad gravel walk ran through the whole length of the cemetery. The little "heaving" mounds rose thickly on either side, with their simply epitaphed headstones; and, eventually, the place was seldom without one or more prisoners "walking among the tombs," scaning the inscriptions, and meditating on the stern or touching lessons and recollections thus brought to mind and impressed upon the soul.

Anxious to improve the funeral rites in every proper way, and so make them not only more decent but more impressive, Captain Maconochie desired to provide the prisoners a mort-cloth; but true to his principle of giving nothing for nothing, on which his inflexibility was as unchanging as "the laws of the Medes and Persians," he required three hundred marks to be yielded for one, which thus became the property of the individuals subscribing them, and was hired out afterward as wanted, and much valued, "and in time valuable."

XV. *Industrial labor in prisons is the only occupation that has an amendatory power; the tread-mill, crank, and shot-drill are deteriorating rather than reformatory in their effect.*

Captain Maconochie cites a passage from a report of M. Demetz, director of the agricultural colony of Mettray, to the effect that, while in England the crank and tread-wheel are employed both for ordinary and disciplinary punishments, the young criminals committed to his institution universally object to this, and express great indignation at being set, as they call it, "to grind the air," (*à moudre l'air;*) adding, "We find it of much importance that our occupations, whether ordinary or for punishment, produce a sensible result." Upon this Captain Maconochie observes, "The difference, in moral effect, between sawing wood or other *useful* employment, and 'grinding air,' appears to me to be nearly the whole difference between improving and deteriorating occupation. Even lunatics are soothed by what they consider useful employment, and are irritated by what produces no useful result. In a reformatory course it is of much importance to study every point of this kind. Unless a sphere of useful active exertion is provided, I have always found one of the two results—almost equally disadvantageous—to ensue, viz: either morbid irritation, tending at length to insanity or stupid acquiescence, deriving amusement from frivolous occupations."

We may introduce at this point, though perhaps not exactly falling here, what is said on the question of the competition between free labor

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and convict labor: "It has been urged," he says, (quoting from the committee on criminal law of the Society for Promoting the Amendment of the Law,) "against the introduction of useful employment in our jails, that an impolitic competition between convict labor and free labor will thereby be established. We consider this an utterly futile objection, and one the fallacy of which has been so often exposed, when raised against the introduction of machinery, that it requires no labored efutation from us; but we may observe, in passing, that it is infinitely less applicable to convict labor than to machinery, since the convict must be supported, while undergoing imprisonment, from some funds, and that it is far better for the interests of the community that he should be kept wholly or in part by his own industry than by taxes levied on the industry of others. If every rug, net, and mat used in England were made in our prisons no evil results would follow, but, on the contrary, unmixed good, since the public would be supplied with these articles at a cheaper rate than at present, and those who now gain their livelihood by rugs, nets, and mats would, by degrees, find employment in other trades equally remunerative. We have thought it necessary to allude to this objection, not because we deem it, intrinsically, of the slightest importance, but because we know that at present a foolish prejudice on the subject prevails."*

XVI. *Arbitrary classification, that is, classification by age, supposed criminality, identity or similarity of temperament, and the like, is impracticable, and would be useless if it were practicable.*

On this subject, commenting on an article in the Edinburgh Review, Captain Maconochie holds this language:

> Like all other exercises of mere authority, authoritative classification, here recommended, will prove, I am convinced, a pure delusion; and, in fact, very few practical men, I believe, are not ready even now to pronounce it such. There is no rule by which to regulate it. If by offense, this is the mere accident of conviction; if by age, the youngest criminals, born and cradled in sin, are very often the most corrupt; if by supposed similarity of temper or antecedent character, no one can certainly pronounce on this, and men are as often and oftener improved by associating with their opposites as with those who resemble them. It is impossible to attain real benefit by such means. One general difference between prisoners, at the same time, does exist, which I think it would be important, on many occasions, to keep in view, but not with the aim of separating them—I mean the difference between men who have erred from having more than an average amount of physical energy, and men who have sinned from having less than an average amount of moral principle. The treatment of the two should very considerably differ, and it might not be impossible or unwise to subject this to regulation.

The classification which alone Maconochie approves is based on character, conduct, and merit, as shown in the daily routine of prison life,

* I must enter my emphatic dissent from the position taken by the committee on criminal law, that if all the rugs, nets, and mats in England were made in the prisons, and *none outside*, nothing but "unmixed good" would come of it; and for this reason, that in that case prisoners would learn a business during their incarceration which would be of no possible advantage to them on their return to free society, and they would be even less fitted to command an honest living after their discharge than they were before their committal. This would be a contradiction to the whole modern doctrine of a reformatory prison discipline, the very core and essence of which is that the prisoner, while undergoing his sentence, should have imparted to him the *power* as well as the *will* to earn honest bread after his release. The true policy is *to multiply trades in prisons*, and to give convicts some choice as to what trades they will learn, thus affording them an opportunity to consult, to a certain extent, their own tastes and aptitudes, as well as enabling them to calculate the chances of success that different trades would give them on their liberation. The error of the committee arises, no doubt, from confounding, in their thought, convicts and machinery, two elements or objects identical for certain purposes of their argument, but differing essentially in other respects.—E. C. W.

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such as that which is found in the Crofton prison system, or, possibly, in some particular prisons managed on the same general principles.

XVII. *In a reformatory system of prison discipline, the employment of the prisoners themselves as sub-officers, and even as jurors in trying their fellow-prisoners, is attended with good effects.*

When the object of prison discipline is the moral amendment of the persons subjected to it, the employment of these as under-officers is excellent. Each prisoner, in this case, feels elevated by the elevation of his companion, and the self-respect of the whole body is thus cultivated. It is quite different if the object of the discipline is coercion. In this latter case, nothing can be worse, for the sub-officers uniformly abuse their petty power, and the individual prisoner is doubly crushed under the tyranny of merely another but favored slave.

When a system of prison discipline is mild, rational, and reformatory, nothing conduces more to its success than employing those under to it, even largely in conducting it. They serve both as examples and encouragement to all the others. But when, on the contrary, the system is arbitrary, despotic, coercive, nothing can be more injurious. They always exceed their recognized powers.

Captain Maconochie gives the following account of his management, in this particular, of the penal colony on Norfolk Island:

One of my earliest cares, after landing and studying in some degree the details of the establishment, was in a certain measure to disperse and distribute the men. The barracks were very deficient in suitable accommodation, and were much overcrowded. Regard to decency was impossible in them, and the worst offenses had become common. I sought to combat these evils by lights, and by readings aloud each night for a time in the dormitories. But the main evil was not touched by these means. To abate this I selected, under the guidance of the officers, the best and most trustworthy men, camped them out in the bush, allowed them to choose others as their companions, for whom they agreed to be responsible, gave them huts and gardens close to their work, and ultimately derived the greatest benefit from the whole arrangement. This indulgence was naturally coveted. It became at once a *stimulus* and a reward for good conduct, its refusal a punishment for bad, and its abuse a most unpopular offense among all. The maxim that confidence begets fidelity was never more strikingly illustrated. This distribution of the men necessitated a greater employment of prisoner overseers and sub-overseers, and I was otherwise most favorable to this. In conducting a coercive system such employment often leads to tyranny and abuse, but in a reforming one it is most beneficial. It encourages the best men, increases their influence with the others, and makes these aspire to similar trusts. The very possession of such trusts is also itself a reformatory agent. I saw many instances of originally very different men thus, and thus alone, rendered trustworthy.

In another place he says:

I should never have got on at all on Norfolk Island had I not largely employed prisoners in my management; but by having a host of *persuaders*, for it was thus that I chiefly sought to use them, distributed constantly among the people, most of them taken from among their own "good men," the manly foundation of whose character recommended them to me, as to their companions, in spite of the crimes too often unnaturally superinduced on it by the circumstances in which they had been placed, I prevented much of the evil previously almost boasted of, and to a very considerable extent directed public opinion against what remained of it, even among the old prisoners, to whom no other portion of my own peculiar system was permitted to be applied than the spirit thus imported from it into the old forms of administration. I know that there is a strong prejudice among theoretical reasoners against the employment of prisoner sub-officers, and the instances of cruelty and corruption that may be cited of them in past times in our penal settlements are at once frightful and too true. This, however, has not been the fault of the prisoners themselves, but of those who, by their mistaken notions of discipline, have infused a wrong spirit into them. If they are properly controlled and directed, there is no one, I am certain, who has a practical knowledge of the management of prisoners but will testify to their extreme usefulness. They are like the petty and non-commissioned officers of a ship or regiment, who are, also, equally selected from the ranks sought to be controlled.

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On the subject of employing prisoner jurors, in trials for prison offenses, Captain Maconochie says:

I could have wished to complete the resemblance to free life which I had established by interesting my overseers and other better men in the administration of justice on the island, making them eligible to act as jurors in our prison courts. I am certain that this would have had a great effect on all, but it was beyond my power to do it formally, and I knew that even an application for such power would be ill-received at Sydney. I did, however, make a near approach to it. I opened the doors of our courts, previously closed to prisoners, invited as many to attend them as could be spared from their stated labor, tried every case myself, on important occasions even in the barrack-yard after hours, amid them all; on questions of conflicting evidence would refer to them for suggestions; often received important hints from them, on which I acted; on grave occasions always postponed passing sentence for at least a day after finding a verdict, that I might maturely weigh all the concurring circumstances, and thus in every way sought to beget in them confidence in my desire to act right, and without passion, in regard to them. Nor is there any feeling that it is more desirable to impress on such a community. It is itself improving. As intimated, I would gladly have appointed a select few formally as jurors, but that I feared the innovation might be considered too great at Sydney. I am convinced that in administering summary justice it will be found always beneficial to engage persons of the same class with those subjected to it to co-operate therewith. As it was, besides the measures above detailed, I appointed one man, a very acute and intelligent prisoner, to act as counsel for all accused of offense. He was forbidden to tell me anything that he knew to be false, but, apart from this, his duty was to make the best case for each that the circumstances would admit. I gained two advantages from this: I was led to investigate more closely what he did not say; and the stupid and loutish among the prisoners, who are usually much run down by overseers, had an equal chance with the clever to have their stories fairly told. By the means above described I at length completely overcame what had originally given me much vexation—the sympathy of the prisoners with offense.

XVIII. *Undue restraint on the correspondence of prisoners, and too minute and rigid a surveillance, are both of evil tendency and effect in prison management.*

A prison rule, common to many different countries, is that prisoners shall not have any communication with their families till after they have been three months imprisoned, and only once every three months afterward—just as if it could be the wisdom or interest of society to screen them from the knowledge in detail of the sorrow and the suffering into which their crimes have plunged those dearest to them, or to weaken, almost to severance, those ties which, if maintained, would most facilitate their return to society and stimulate their exertions in it. The regulation is meant as an aggravation to suffering, but in most cases it operates rather as a relief; and it deeply injures the criminal by impairing, and sometimes almost obliterating, whatever good feeling still survives, when a wife and family, a mother, or sister, is thus debarred from communicating their griefs and distresses to the author of them, and from directing to him whatever monitions, counsels, or exhortations may to them seem fit and necessary.

Captain Maconochie claims, not without reason, that the introduction of the mark system would enable the authorities to modify, most advantageously, the restriction mentioned in the preceding paragraph—often most injurious in its effect—viz, that on frequency of intercourse, by letter or visit, with friends and relations outside. This is prevented altogether, except at long intervals, generally three months, and, as stated above, when the privilege comes to all in their turn, as a right, and always without any special effort or sacrifice on the part of the prisoner to obtain it, and bearing, consequently, like a time sentence, lightly on the worst men, but pressing hard, and often with blighting effect, on the better and more promising. The heedless, the hardened, and the profligate care nothing for it; to many of them it is even a shield, guarding them from the knowledge of the tears and reproaches of those whom they have

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deeply injured, perhaps ruined, by their misconduct; while the father, the husband, the brother, still thoughtful and affectionate, is profoundly moved by it; and all are so far injured that they become partially forgotten by their more distant friends in these long intervals, and, as a consequence, on discharge, lose their active services to assist them in recovering the means of an honest living. In every way the arrangement is thus seen to be bad. But, under the mark system, it could be easily and most beneficially modified by imposing a charge on every prisoner receiving a letter or visit, the reception or non-reception of either being entirely in his own choice. Writing himself, he will have to pay in marks for paper and postage-stamps, his letters, as a matter of course, being always subject to examination. But beyond these checks, there should be none inside the prison, as regards the matter of letter-writing; and outside, on visits, only one, viz, a proper authentication as to the character and relationship of the visitor.

As regards the second branch of the maxim, which serves as heading to the present section, Captain Maconochie remarks:

> Scarcely any point is more insisted on in modern codes of prison discipline than that of keeping prisoners under a constant and rigorous supervision, a practice which, however plausibly it may be advocated, both generates and fosters that habit of eye-service which so peculiarly unfits a discharged prisoner for the task of self-guidance after release

Again:

> It seems to me impossible to avoid the conclusion that the minute supervision and regulation maintained in our best jails, relaxed necessarily in our inferior ones, impossible to be maintained in ordinary transportation, and for which I systematically substituted, where I could, a large measure of self-guidance, with a strong motive to direct it right, is, in strictness, unfavorable to the reform of prisoners. It may give the desire of amendment, but it takes away the power. It enfeebles character, makes it ever seek to lean upon direction, and delivers it up, bound hand and foot, to subsequent temptation.

XIX. *Indiridualization is an essential principle of a reformatory prison discipline.*

Prisoners, to insure their highest improvement, must be treated *individually*. While they are all alike placed under a general law, the conduct of each, as directed by it, should be specially and minutely noted. The improving effect of this would be found very great. It would be a first step toward restoring to each that feeling of self-respect without which no recovery will ever be found permanent. Each should be enabled to know, even from day to day, the light in which his conduct is viewed in all important particulars by those placed over him; for thus alone, as his good purpose strengthens, will he be enabled to correct that wherein he may be found deficient. To this end a card should be hung in his cell, with four rows of figures constantly kept upon it. The first should indicate the prisoner's general conduct; the second his degree of industry and exertion; the third his attention and improvement, as noted by the chaplain; and the fourth the same, as shown by the schoolmaster's record. By this means, whenever the governor, or chaplain, or a magistrate, or any other entitled to make such perquisition, goes round, the whole conduct—and thence the character—of the individual would be instantly patent, and censure, caution, advice, or exhortation could be addressed as each might be needed. These marks would also form the basis of those estimations of character according to which prisoners would be passed through the different stages of treatment, rising successively from grade to grade, until, beginning at the lowest, they should have at length reached the highest.

It will be found important that rewards for exertion and improve-

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ment, other than physical comforts, be progressively added; or even that they should, at the discretion of the prisoner, be substituted for such comforts. It is right and fair, and even improving, that consideration for the last should be used as a *stimulus* in the lower stages of reformatory treatment. Such, indeed, is the arrangement of Providence in human society, and we cannot copy a better type. But in proportion as the higher nature of the prisoner is developed and cultivated, higher objects of desire should be suggested and made similarly attainable, in order at once to keep the upward tendency active, and to raise the character of its aspirations. For this purpose a longer allowance of gas-light, a wider scope of books and instruction, and increased facilities of communication with families and respectable friends outside, these and other like indulgences will be found powerful and most improving encouragements. At no stage, however, should any remission be made of the call for continued active exertion. To reward a prisoner, in any part of his course, by permitted idleness, is to undo the improvement that may have been already effected in him by dissociating the ideas of sustained effort and success, which should, as much as possible, be kept inseparably together in his mind. Even when partially sick, employment of some kind should, wherever practicable, be thus given him. The surgeon should be constantly invited to suggest such. Not infrequently this will even promote recovery—if not otherwise, yet by making a state of sickness not entirely a state of exemption. If even light employment will impede recovery, the surgeon will, of course, interfere to forbid it.

XX. *Prison officers need a special education and training for their work.* On this subject Captain Maconochie holds the following language:

When prisons are made real penitentiaries—schools of penitence and reform—the military type in which so many visiting justices and governors now so much rejoice, should be sedulously excluded from them, and a clerical type rather substituted. A change in the classes of men from which their officers are usually selected would be also most desirable. The writer's opinion is that governors of prisons should even form a class by themselves, to be devoted to that service exclusively, in which they should, when young, be thoroughly trained in all their duties, which are various. They should serve first in the lower offices; then as deputy governors; then as governors of small prisons; thence, according to their ascertained merits, chiefly tested by the small proportion of reconvictions to them, transferred to large; and thence progressively become disposable for service in the same capacity in any part of the Queen's dominions. Thus alone would the details of prison discipline be gradually perfected, and uniformity in its administration be also attained. Only when the administration of punishment is thus made a profession will it become scientific, uniform, and *successful*. Promotion in the department thus formed should be much influenced by success in keeping down reconvictions. When these are numerous, there are almost always faults in the officers as well as in the men.

XXI. *The essential complement of a reformatory system of prison discipline is such provision for discharged prisoners as will most effectually hold them to their honest intents and prevent their falling back into crime.*

After adverting to the duty, and even necessity, on the part of society, of taking an interest in liberated prisoners, Captain Maconochie thus averts to his experience as governor of the prison at Birmingham:

Since the Birmingham jail opened an effort has been made to realize this portion of the anticipation founded on the whole system. Aided by a small fund raised by voluntary subscription, more than forty women have been assisted over the first difficulties of their return to society, at an expense not exceeding from twelve to fifteen shillings each. The chief expense has been for sending to a distance such as had friends out of Birmingham willing to receive them, and for giving to others decent clothing in which to seek for service, and to all a few shillings, by the aid of which to get over creditably the first few days. Very few of these women have been returned to prison, and a fair proportion are known to be doing well. Similar efforts have been also made to assist the men and boys again into service, and with much the same results.

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Again:

When a prisoner has completed his training under this [the mark] system—in other words, after he has completed his *minimum* time and fulfilled his entire task—it would be very desirable that he should have, at his own option exclusively, the power of remaining, up to a given time, in precisely the same circumstances as before, subject to the same rules, and in no respect differing in external appearance from what they were, but with the privilege of leaving when they please, and of receiving, when discharged, a money payment (say a penny for each mark) for whatever surplus they may, within this time, have accumulated. Many plans have been lately suggested for the relief of discharged prisoners, but none, I am convinced, would be so effective as a small fund thus obtained, the fruit of their own voluntary diligence and self-denial, and bearing its own testimony, with probably a concurring one from the governor and chaplain whom they leave that they really possess these virtues, and have exhibited them through the course of, perhaps, a long previous sentence.

Still again:

An observation may be appropriately submitted here on the essential difference that exists between the mark system and all others that have ever preceded it. *Their* elementary principle has been, without exception, the *subjugation* of prisoners; the reducing them, by whatever means, to implicit, immediate obedience; the regulating their every act, almost their every thought, by an arbitrary standard; the making them thus what are called good prisoners, too much, if not altogether, overlooking the injury so done to their power of acting worthily afterward as freemen. Crushed and degraded as they thus are while in prison into mere machines, they inspire, and can inspire, no confidence on their discharge. Even when they then profess good resolutions, the sincerity of these is doubted. Too often their expression really is hypocritical; and morally weak as their treatment has made them, the stability of their resolutions cannot be confided in, even when they are most sincere. They have so long acted under the influence of mere obedience to external direction that when this is removed or replaced by some evil influence, like children deprived of the support of leading-strings, they totter and almost inevitably fall, for their powers, as well as their purposes, have been thus enfeebled. * * * * * *

Every shade in this picture would be reversed if the mark system were introduced, in its whole length and breadth, into our systems of public punishment. So necessarily reformatory, so industrially, morally, intellectually, and religiously *educational* is it in its whole structure that it would be scarcely possible for even the worst to pass through an extended course of it without being sensibly improved; while, as the mass of discharged prisoners would be found well-purposed and useful, the present unfavorable impression of them would abate; they would more easily find honest bread; their difficulties would diminish in proportion as their power of overcoming them increased; and at length even an *esprit de corps* might be expected to arise among them, impelling them to consider it manly, as well as right, to overcome temptation and pusillanimity. Their long previous aspiration of improvement, and their habit of voluntary self-denial in prison, would strongly conduce to this, and would be one of the most beneficial results that could be obtained from the plan.

I have now completed the design with which I commenced this paper, namely, that of presenting, in outline, the views and reasonings of Alexander Maconochie on the subject of prison discipline. The exhibition, though as far as it goes a faithful reflection of his teachings, has little of the warmth and intensity that glow on every page of the writings of this great social philosopher; and especially does it lack those living illustrations from his own experience which impart such animation and power to his productions; for it must not be forgotten that this great thinker was equally great as a worker. Maconochie was not a mere theorist, sending forth his speculations from the cabinet of an amiable recluse. He was, as well, a man of action, who applied the principles which he developed, with reformatory results as precious as they were remarkable; first on Norfolk Island, and afterward in the jail of Birmingham, though in neither up to the limit of his wishes or his convictions; for in both he was in a thousand ways hampered and repressed by the prejudices and the pusillanimity of "the higher powers." To John Howard belongs the higher honor of having awakened mankind to thought upon this vital question; to Alexander Maconochie will yet be assigned the highest honor of having guided that thought to enlightened,

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wise, and fruitful action. I leave off, then, as I began, with the expression of my belief that among prison reformers Maconochie holds the most conspicuous place; that he stands pre-eminent in the "goodly company." In him head and heart, judgment and sympathy, the intellect and the emotional element, were developed in harmonious proportions; were equally vigorous and equally active; and all consecrated to the noble work of lifting the fallen, reclaiming the vicious, and saving the lost.

C.—REPORTS OF STANDING COMMITTEES OF THE NATIONAL PRISON ASSOCIATION OF THE UNITED STATES.*

1. REPORT OF THE EXECUTIVE COMMITTEE.

The first annual report of the executive committee of necessity can embrace little more than the record of the organization of the association, which was not perfected until the year had considerably advanced. The chief work accomplished (which was one of no ordinary import to the cause of penal reform and the cure of crime) has been the successful preparation, in European kingdoms and on our own continent, for an international prison congress in London during the ensuing summer. The labor of this vast undertaking has fallen wholly upon the able corresponding secretary of the association, and his wisdom, perseverance, and executive ability are fully illustrated in the wide and remarkable results of his endeavors, which are set forth in his interesting report, as commissioner of the United States, made to the President of the Republic.

The national association for the United States became a necessary incident of the movement to secure an international congress. From a very extended correspondence with leading writers upon penal science, and with prominent magistrates and heads of penitentiaries in this country and Europe, the expediency of a great central public convention for a comparison of views among thinkers, and of a discussion of the vital questions still unsolved, was clearly justified, as promising the best results to the cause of penal reform. Such a gathering could not be arranged without long and laborious preparation, and it was adjudged advisable to hold a preliminary congress in this country, at which definite measures could be taken for the calling of the larger and more august body to represent all the civilized nations of the earth.

The congress which met at Cincinnati, Ohio, commencing October 12, 1870, and continuing for a full week, was one remarkable for the number of its representative men and women, the high official and social position of many of its members, the ability and variety of the papers read, and the valuable practical discussions which followed the reading of the essays. One of the chief topics of consideration, suggested in the printed call for the convention, was the question of the expediency of the proposed international congress, and the inauguration of preliminary measures to secure it if its convocation should be deemed desirable. The proposition for the congress being unanimously accepted, it became evident that a national association, as an organ of communication with foreign bodies, would be indispensable to secure unity and efficiency of action; and that, as a permanent corporation, it would bring about a

*These reports were presented and read at the first annual meeting of the association, held in the city of New York, January 27, 1871.

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harmony of operation among the various prison and reformatory societies, effect a system of home and foreign exchange of documents, and serve in many ways, quite apparent, the cause of penal reform.

Upon a motion, therefore, of Governor Baker, of Indiana, a committee of twelve gentlemen of well-known intelligence and interest in the questions involved, from different portions of the country, was appointed to prepare a charter for such an association, to secure an act of incorporation in either of the States of New York, Pennsylvania, or Ohio, and to complete the organization by the election of additional members, in accordance with the requisitions of such an act.

At the session of the legislature of New York, in 1871, a very liberal and satisfactory charter was secured, which was formally accepted by the incorporators under the act on the 26th of April, 1871. At this, and a succeeding meeting in May, the association was fully organized, a form of constitution and by-laws was prepared and accepted, a list of officers were appointed, and a number of foreign corresponding members were elected. The full details, with the names of officers and members, will be found in another portion of the report. The name of Dr. E. C. Wines, as the American commissioner to represent this country in the preliminary measures for the inauguration of the national congress, was the unanimous nomination of the Cincinnati convention, and was the one name thought of for the position of corresponding secretary, when the new organization was completed. How well this unanimous sentiment has been already justified will be made to appear in the work which the secretary has so successfully prosecuted during the portion of the year that has elapsed since the association had an existence.

On the very important matter of finance, the executive committee have not an entirely satisfactory report to make. In addition to the heavy labors of his office, with the innumerable details incident to the arrangements for the prospective congress, entailing an absence of nearly five months from the country, the secretary has been obliged to be the collector of all the funds received into the treasury of the association. This, added to the other labors of his office, is obviously too much for the strength of any one man; and it will be indispensable that a financial agent, or assistant secretary, be appointed, who shall devote himself, as far as may be necessary, to gathering the means required for the work of the association, which is likely to increase from year to year, until its dimensions assume a vastness and importance commensurate with the field which it proposes to occupy.

The field and objects of the association are thus exhibited in a circular prepared by the corresponding secretary, at the request of the board:

As set forth in the act of incorporation, it has the following objects in view: 1. The amelioration of the laws in relation to public offenses and offenders, and the modes of procedure by which such laws are enforced. 2. The improvement of the penal, correctional, and reformatory institutions throughout the country, and the government, management, and discipline thereof, including the appointment of boards of control, and of other officers. 3. The care of, and providing suitable and remunerative employment for, discharged prisoners, and especially such as may or shall have given evidence of a reformation of life.

As regards the first of these objects: There is scarcely a reform more necessary today than that of the criminal codes of our several States. Everywhere there is needed an administration of justice more prompt, more effective, more humane, more reformatory; that is to say, more in harmony with the rational aim of all repressive legislation—the diminution of crime. It will be the work of the association to study and develop the reforms needed in this department of social science, and especially to seek to impress upon our criminal legislation the great principles of humanity and reformation, which alone will render repressive laws at once effective and popular.

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As regards the second of the objects named: The improvement of our penal and correctional institutions, by improving their discipline, is no less important than the reform of our criminal codes. The great aim here is, first, to arrest the increase of crime, which is at once a disgrace and a danger to our age, and then to diminish its volume. Two problems, especially, claim our study at this point—the first, a problem of prevention; the second, of cure. Preventive agencies need to be more widely and actively applied. The true field of promise, as regards the repression of crime, lies just here; and if the right methods of working it can but be ascertained and employed, there is reason to hope that the stream of crime may be thus, in great part, cut off in the fountain. But the second problem is, to reclaim and restore those who have fallen. A few experiments of a reformatory prison discipline—less, however, than can be counted on the fingers of a man's hands—have been made in different parts of the world; and the results have been such as to excite not only the hopes but the wonder of those who have been made acquainted with them. When reformation comes to be everywhere made the real aim of prison discipline, as it should be, and all prison officers work heartily and intelligently to that end, we believe that results will be accomplished of which the most sanguine scarcely dare dream at present. A formidable obstacle exists to the introduction and use of a truly reformatory discipline in our prisons, in the undue influence of party politics over their government and administration in nearly if not quite all our States. While this influence remains dominant, leading necessarily to instability in the tenure of office and a low grade of official qualification, all reforms must be partial, temporary, and uncertain; and we shall have made but little progress that will prove solid and lasting, until we have overcome this difficulty. It will be the office and work of the National Prison Association to study, with earnest and persistent application, all the problems here indicated; to unfold the results of such study in their annual reports and other publications; and to endeavor to reduce to practice the principles reached through their investigations, in improved prison systems and a better administration and discipline in the prisons of our several States.

As regards the third object mentioned in the charter: The problem how to dispose of discharged convicts, how to hold them to their honest intents, and prevent their relapse, is one of the most perplexed and difficult in the whole science of penology. Yet, to save the released criminal, especially when he has left the penitentiary with a determination to engage in a course of honorable industry, is an object of the highest importance to the community, as well as to himself. The effect of punishment, under the present state of public sentiment, destroys, in great measure, the convict's prospect on his discharge. The ignominy of his imprisonment clings to him in his freedom. Society does not trust, and therefore will not employ him. Thus a popular punishment, as unjust as it is cruel, follows the legal penalty he has undergone, and the liberated criminal is often driven to the hard necessity, whether he will or no, of returning to crime to avoid the horrors of starvation. It will be the high duty, as it will also be the self-imposed labor, of the association, whom we represent and in whose name we speak, to study, and, if possible, to solve the problem, as grave as it is intricate, which we have just stated.

Beyond the objects recited in our constitution, or rather included therein, will be that of visiting the penal and reformatory institutions of the country, especially in States where such institutions are in an unsettled or formative condition, and of aiding the authorities in charge by information, suggestion, counsel, &c., in the work of creating or improving their prisons and prison systems.

Still another duty of the association, clearly embraced within its scope, as declared in the constitution, will be that of offering an annual review of the progress and condition of penal affairs in the several States, as a knowledge thereof shall be obtained by personal visitation, or as the same may be exhibited in the messages of their governors, in the reports of their prisons and reformatories, in the reports of State committees and prison societies, and in the statements received in reply to circulars that may have been sent out in quest of information; which review will, as a matter of course, be accompanied with such criticisms, suggestions, and recommendations as may be judged suited to the exigencies of the case in hand, whatever it may be. Here also will, equally, as a matter of course, fall the most complete exhibition attainable of the penal and reformatory statistics of the States, which will, it is confidently believed, from year to year, improve in fullness and uniformity till they shall have approached, at least, the standard of perfection; and we shall thus have gathered a body of information in this form, of the highest value as a guide to just conclusions, and as a basis for wide and effective legislation.

The coming year will be one of great interest, and will doubtless form an era in the history of penal and reformatory discipline. The gathering of practical prison reformers, of writers upon this leading question of social science, and of representative men from the various nations of Europe and America, the collection of the gathered experience and wis-

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dom of a century of thought and experiment, will render this one hundredth anniversary of Howard's first movement for the improvement of the condition of imprisoned men memorable in the annals of penitentiary reform. The condensed and sifted report of the discussions of the occasion, which will be, doubtless, embodied in the second report of the corresponding secretary, cannot fail to be a full compensation for, and justification of, the incident expense in the organization of the association, and of the efforts to secure the international reunion of a congress, and it may be hoped and believed that it will.

HORATIO SEYMOUR, *Chairman.*

NEW YORK, *January* 27, 1871.

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2. REPORT OF THE COMMITTEE ON PRISON DISCIPLINE.

The subject intrusted to this committee is a large and rather indefinite one, embracing, as it apparently does, the discipline of prisons of all kinds, in all the States and Territories of the Union. To discuss it properly would demand a volume, rather than the few pages within which we must confine our remarks. Let us begin, then, by stating, as briefly as possible, what the problem of prison discipline is, as it presents itself in this country.

In seeking to measure, statistically, the prison population of the United States at any given time, the tables of the national census (even when made up, as they have recently been, under the direction of so diligent and enlightened a chief of the Census Bureau as General Walker) afford comparatively little help. So imperfect is the census law, and so unskilled are the enumerators employed, that, in the tables as made up, no proper discrimination is made between the different classes of prisoners in each State and Territory, and even the whole number in all the prisons is quite inadequately stated. For example, the enumerators for Illinois returned the "whole number in prison" in that State June 1, 1870, as only 430, which was less than the number at that date confined in the eighty county jails of Illinois. The 1,000 or 1,200 State prison convicts then confined in the great castle at Joliet were quite overlooked; and Illinois, with more than two and one-half millions of inhabitants, appeared to have less than one-third as many criminals as New Jersey, with less than a million people. Again, the New York enumerators reported the number then confined in this great State as only 4,142, although the city of New York alone, at that time, held under imprisonment 1,360 persons, while there were about 1,400 at Sing Sing, 1,000 at Auburn, 500 at Dannemora, 350 at the Albany penitentiary, and in the whole State not less than 6,500 prisoners in confinement. In many, perhaps most, of the States, the enumeration was more exact; and probably these defects of which we speak have been partially corrected in the revised census tables not yet published. From such *data* as we have we estimate the whole prison population of the country at any one time as varying from 35,000 in July to 40,000 in February. Of this whole number an average of some 16,000 are probably confined in the forty State prisons, while 12,000 more are held under sentence in houses of correction, work-houses, district penitentiaries, and jails, and 8,000 more are awaiting trial or are held as witnesses in the jails, station-houses, and other places of detention in the United States. Among these 40,000 prisoners are all grades of criminality and

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many grades of innocence; they are confined in some thousand or more prisons, of every style of architecture, and under every variety of discipline except the best; and in some of our prisons a close approximation is probably made to the best attainable, if not the best imaginable, system of discipline. The problem is to adapt this best system to the different grades of our prisons and to the almost infinite variety of circumstances that present themselves in a country so vast and heterogeneous as ours. To do this requires better graded prisons, a more thorough classification of prisoners, and an infinite patience and practical wisdom in applying the maxims of a sound theory to the daily management of these thousands of our fellow-beings, held in confinement under some forty different jurisdictions, and, if we include counties and great cities, not less than a thousand mutually independent prison authorities. The prison reformer, however sanguine, might well shrink from dealing with a subject so formidable in its breadth and the variety of its detail.

And yet, thanks to the patient labors of our corresponding secretary, Dr. Wines, and others, who in past years have given their thoughts to this problem of American prison discipline, it by no means offers those difficulties which are conceived at the first sight. A few great classes are found to include these hundreds of prisons, these tens of thousands of criminals; while the century now almost elapsed since Beccaria and Howard began to demand the improvement of prisons, has accomplished much, by many thoughtful heads, just and humane hearts, and laborious hands, toward the establishment of a wise and effectual system of prison discipline. The methods in use in our American prisons are reducible to three: the old congregate system which prevailed before the building of the Auburn prison, half a century ago, and still lingers in many places; the new congregate, or Auburn, or silent system; and the separate or Pennsylvania system, now in use, it is believed, only in that State, on this side of the Atlantic, though common enough in the states of Europe. Outside of Pennsylvania, the Auburn system, more or less modified, prevails in nearly all the State prisons, and in the better-managed city and county prisons. In Pennsylvania, the separate system prevails at the eastern penitentiary in Philadelphia, where it began at the Moyamensing prison in the same city, and at many of the other county prisons. The old congregate system, or lack of system, prevails in some few of the State prisons, and in many of the ill-managed county prisons. Indeed, the tendency of the Auburn system, when carelessly administered, is to revert to the old method of congregation, out of which it sprang.

From the best accounts we can obtain, a great majority of the county jails in the United States, estimated at nearly a thousand in number, are conducted virtually on the old congregate system. Within the past two years official reports have been made, more or less in detail, concerning the county jails of Maine, Massachusetts, New York, Pennsylvania, Ohio, Michigan, Illinois, and a few other States; and, except in Massachusetts, and a few of these jails in Maine, Pennsylvania, and New York, the rule is congregation and bad discipline at those periods when the jails are most crowded, and often all the rest of the year. In the States from which we have no reports on this subject, there is no reason to suppose that things are any better. An intelligent commission now engaged in examining the prison system of Connecticut, finds its county jails in a sad condition in many respects; and similar information comes to this committee from New Jersey, Missouri, and elsewhere. In New Hampshire, within the past five years, a great improvement has been made in the county prisons, but they are still

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far from being model establishments. In Alabama we learn that the sentenced prisoners in several of the county jails, to the number of eighty in all, have recently been employed at open-air labor, at a distance from their prisons, by a railroad contractor; the men work like free laborers during the day, but sleep at night chained together in gangs of ten. This practice may prevail in some of the other Southern States, but we have not heard of it; we shall speak of this more at length in another place.

We may illustrate the present condition and state of discipline in hundreds of these county jails, by quoting from a few of the official reports above mentioned. The special commissioners to examine the penal, reformatory, and charitable institutions of Michican, through their chairman, Judge C. J. Walker, of Detroit, thus reported early in 1871:

Ours has been the experience of all who have undertaken to examine the actual condition of county jails, whether in this or other States. Their condition is wretched beyond all power of description, and beyond all conception of those who have not had the experience of their own senses in the matter. The defects in them are not owing so much to the manner in which they are kept, as to inherent defects in their construction, their dilapidated condition, and a fatal vice in the common jail system. The jails are crowded to excess; two, and sometimes three, persons are put into a single cell, and a corridor not large enough to accommodate half a dozen is the living and eating room of a score of prisoners. As a rule, continued good health is impossible under such circumstances. The moral condition of our jails is infinitely worse than their sanitary condition, and after a full examination and careful consideration, we have come to the clear and painful conviction that they are the very hot-beds and nurseries of vice and crime, and that the State is directly responsible for a large share of the crime which it seeks to punish. If the wisdom of the State had been exercised to devise a school of crime, it would have been difficult to devise a more efficient one. Here are the competent teachers, the tractable pupils, the largest opportunities for instruction, with nothing to distract attention from the lessons. (Pages 5, 6, and 7.)

These are the observations of Judge Walker, of Michigan, a clear-headed and experienced lawyer, and they are fully sustained in the case of Illinois, by the remarks of Rev. F. H. Wines, secretary of the Board of Charities in that State, who says in his first report, made soon after the adjournment of the Cincinnati prison congress:

The greatest of all faults in the construction of our county prisons is the absence of any means of classifying prisoners. The sane are not separated from the insane; the guilty are not separated from the innocent; the suspected are not separated from the convicted. Hardened criminals and children are thrown together; the sexes are not always separated from each other. The effect of this promiscuous herding together is to make the county prison a school of vice. In such an atmosphere, purity itself could not escape contamination. The prisoners, in nearly every instance, are absolutely without employment for mind or body. There are no libraries in the jails; even a Bible is ordinarily wanting. Idleness is a fruitful source of vice; and enforced idleness has developed the most debasing passions and habits. No attempt at secular instruction and education is made in any jail in Illinois. The efforts made at reformation of criminals are unsystematic, unintelligent, fitful, and, in most of the counties, wholly wanting. (First biennial report of the board of State commissioners of public charities, December, 1870, pp. 213, 214.)

The Ohio board of charities take the same view of the county jails in that great State. In their fourth biennial report made early in 1871, (page 20,) they say:

Our jails are and always must be, as now conducted, nurseries of crime; but with separate confinement for prisoners awaiting trial, and hard work elsewhere for those convicted and sentenced, it is believed that the jails may be much improved, while their expenses would not be materially increased, and might, perhaps, be diminished. It is not right that those who are simply accused of crime, both the innocent and the guilty, the young as well as those steeped in crime, should be doomed to an imprisonment more demoralizing and brutal than confinement in the penitentiary; but such is the fact in reference to most of the jails of Ohio.

It is needless to multiply citations to show what is so evident to all

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who have any practical acquaintance with prisons managed on the old congregate system. There is no longer any excuse for ignorance on this point; the brutalizing, wasteful, and every way deplorable results of such prisons are well known; and it should be the first effort of our association to have them reformed. Along with this effort should go one for the like reformation in city prisons, station-houses, calabooses, lock-ups, or by whatever name are called those houses of detention where petty criminals, and sometimes those of high criminality, undergo their first few hours of confinement. These places are almost always municipal prisons, and are more numerous, perhaps, and contain more persons in a year, than all other prisons put together. But it must be understood that the period of confinement for each person arrested is very short, ranging from half an hour to a week, but usually less than a day. Hither are brought all persons arrested at night in cities and villages, and a great many of those arrested by day. From one-half to five-sixths of these persons are discharged without conviction, and a great number without trial; the rest are taken from court to the jail, the work-house, or the house of correction, according to the magnitude of their offense or the convenience of the parties. If the offense is gross, or the trial can be delayed, they are sent to jail to await trial; otherwise they are sentenced to some convict prison, or, if fined and unable to pay, are detained in jail. Numerous and important as these municipal prisons are, little is known of them by the general public; for they are seldom entered by any save prisoners, officers of police, criminal lawyers, or other persons whose business leads them there. But they are powerful auxiliaries in the work of corrupting the young, and making shameless the older culprits, while they often receive and contaminate persons guilty of no offense, and charged with none. They are the holes where petty official fraud and abuse hide and coquette with monstrous vice; they are the workshops of detectives, where felony is compounded and impunity is manufactured to order. It is time that some new Howard should enter upon the work of their exposure and purification; but each of our great cities would need a Howard of its own for an undertaking so serious.

A few of our county jails and most of those establishments known in different portions of the United States as houses of correction, work-houses, houses of industry, and penitentiaries, (other than States prisons,) are conducted on the new congregate or Auburn system, with various modifications, suited to the time, the place, and the character of the prison officers. A comparatively small number of this class of prisons are conducted, in Pennsylvania, on the separate system; but this does not include the new work-house of Allegheny County, at Pittsburgh. It is in this class of our prisons that the greatest improvements in penal and reformatory discipline have recently been made. Here, too, are found our most experienced and best prison officers—such men as Amos Pilsbury, at the Albany penitentiary; Z. R. Brockway, at the Detroit house of correction; Henry Cordier, of the Allegheny County work-house; and others who might be named. The management of prisons of this class is, as a rule, more permanent than that of either State prisons or jails; and, as a natural consequence, the best officers are attracted to them. In some, as the Albany penitentiary, the Auburn system is maintained with much rigor; in others it is greatly relaxed, and there is an approach to the best features of the Irish system, as taught and practiced by Maconochie and Crofton. Were our criminal laws generally and judiciously amended, so as to allow longer sentences for the petty criminals who make up the great majority in these estab-

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lishments, they would soon display results more gratifying, we believe, than those obtained in any of our State prisons, both as respects reformatory, industrial, and pecuniary success. With all the disadvantages of short sentences, the best four prisons of this grade are now self-supporting, and, to a considerable degree, preventive of crime. New prisons of this class are constantly appearing, especially in the older and more populous States, and always in or near large cities. The tendency is to make them practically district prisons, receiving convicts from a wide area or a great population, and to classify their inmates more and more thoroughly. The new prison commission of Massachusetts has been occupied for the last year or two in developing a working plan for such classified district prisons throughout the whole of that State, which now contains more prisons of this grade than any other State.

Coming now to those prisons which it has been customary to reckon as the most important of all the American prisons, because they receive persons convicted of the higher crimes and are managed directly by the State authorities, we find that the number of these State prisons is something more than forty. Many of them are known by the distinctive title of "the penitentiary" in the States where they are located. But this is a name given also to places where lesser criminals are confined, under county or municipal authority, and therefore it will be convenient to drop the word in this connection and speak of each establishment owned or managed by the State authorities as a State prison. In most of the States there is but one prison of this class; in Delaware, and perhaps one or two of the other States of small population, there is none; in New York there are three, and in Massachusetts, Pennsylvania, and Indiana there are two each. The second State prison in Massachusetts, however, (established at Bridgewater in 1866 under the name of a "State work-house,") receives only persons convicted of light offenses, and therefore belongs in grade rather with the houses of correction previously mentioned, and will not be considered in the remarks about to be made on the class here styled State prisons. This class includes establishments of the most diverse description, ranging in the number of prisoners which they contain from the huge structures at Sing Sing, Joliet, and Columbus, with more than a thousand convicts in each, down to the prison of Rhode Island, which combines with itself a county jail, and the diminutive prisons of Oregon and Nevada, with less than fifty convicts in each. At most of these establishments the prisoners are employed within the walls, but in some of the Southern States, notably in Virginia, Alabama, Mississippi, and Tennessee, some part of the convicts have been worked on railroads, mines, &c., at a distance from the prison establishment. We can see many advantages in this mode of employing the convicts, provided it were adopted, as at Lusk, in Ireland, in connection with a well-graded system of promoting them from one degree of freedom to another, until they should be prepared for their final discharge and restoration to society. But the experiment in open-air labor in the States named seems to be purely a business operation, by which the State is expected to gain or to save money, and we have heard that it is carried on with very little regard to any care for the reformation of the convict.

Just at present the number of State prison convicts seems to be slightly decreasing in the older Northern States, but increasing rapidly at the South and West. The number of colored convicts is much larger than before the civil war, and in many, probably most of the southern prisons, these make a majority of the inmates. We estimate the average number in all the State prisons as about sixteen thousand, and prob-

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ably all these, except the six or seven hundred now confined in the Eastern penitentiary at Philadelphia, are governed by what is loosely called the Auburn system. In the establishment just named, the separate or cellular system is still in force, though the number of convicts is so much greater than that of cells that a considerable portion of them lodge two in a cell. In nearly all the States provision is made for shortening the sentence of convicts for good conduct, but, so far as we know, few or none of the prisons have adopted the simple and exact mark system for determining the record of a prisoner, which is in vogue in Ireland with such good results. Nor is opportunity given for classifying the convicts according to merit, and for promoting them from one grade to another, as is done in Ireland. School education also, which, in the Irish convict prisons, under the regulations established by Sir Walter Crofton, has played so important a part in the reformation of criminals, is greatly neglected in our forty-odd State prisons. In a few of them schools are maintained, but generally without teaching many of the prisoners or giving much instruction to the small number included in the classes. The number of these schools is increasing, however, and the demand for them is more urgently made each year. The same is true of measures for aiding and supervising discharged convicts, though in this work also our prisons fall very much behind those of Ireland.

A strong feature of the American State prisons has always been the amount of productive labor performed in them. Several of them, especially in New England, are self sustaining, and even return a small revenue to the State in excess of the cost of maintaining the prison and paying all its expenses. None of the largest prisons, however, except that of Ohio, are thus self-sustaining; and it may be laid down as a rule that, beyond a maximum of five or six hundred prisoners, it is difficult to employ them so that their labor will repay the cost of their support. It has been found comparatively easy to make the small prisons of Maine, New Hampshire, and Connecticut pay their expenses by their earnings, with an average, for a period of years, of less than two hundred convicts; but almost impossible to make the great prisons of New York, Illinois, California, and Missouri do this, even for two years in succession. The Massachusetts prison at Charlestown, from which we have financial returns for a longer period than from any other prison in the country, is an evidence to the same effect. During the fifty-six years that these returns cover, the Charlestown prison has exhibited a profit above its expenses in eighteen years, a deficit in thirty-five years, and in the three remaining years a balance so small either way as to leave it in doubt whether its expenses were fully met by its earnings. But in the first thirty years, when its number of convicts averaged less than three hundred, the Charlestown prison made an aggregate deficit, during the whole period, of less than $60,000; while in the twenty-six years since, the average number having been nearly five hundred the greater part of that time, the aggregate deficit has been more than $120,000, or twice as much as when the prison was small. Although we do not regard the revenue derived from the labor of convicts as of much importance, compared with their judicious treatment and their moral improvement, it still seems proper to note the facts that prisons of moderate size can readily be made self-sustaining, while the larger ones cannot. At the same time all the influences of a prison of less than five hundred convicts are more favorable to the reformation of its inmates than the circumstances of the great establishments, like those of Sing Sing, Auburn, Joliet, and Columbus. We believe, therefore, that it would generally be better policy for a State to build a new prison when

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its convicts rise above an average of five hundred in number, than to enlarge the old establishment; unless, indeed, it chooses to adopt some method of conditional pardon, by which the increase in numbers can be kept down.

Were this committee to undertake a discussion of the general principles of prison discipline, it could do little more than repeat the admirable statements and arguments laid before the Cincinnati prison congress by Dr. Wines, and in substance adopted by that assembly. We cannot omit this opportunity to remark, however, that the lapse of another year, and the added testimony it has furnished to the excellence of the so-called Irish prison system, tends to confirm and deepen the impression that it is the duty of prison managers in the United States to adopt the main features of that system with as little delay as possible. We believe them to be as practicable in this country as they have proved themselves to be in Ireland; and while they would encounter here some peculiar difficulties, the circumstances of our community would offer some peculiar advantages for their introduction.

The first great want to be met in the United States, however, is something which preceded the establishment of Sir Walter Crofton's system in Ireland, and which is indispensable here to the adoption of any general improvement of our prisons as a whole. We need in every State an inspector or a commission of inspectors, who shall have access to the prisons of all grades, and some power of supervision over all. Such inspectors would bring to the notice of the legislatures and of prison officers the actual defects and necessities of the prison system of each State; they could take a comprehensive, practical view of the whole field of action, and recommend such changes as would correct the glaring anomalies and gross abuses of the existing prison system in nearly all our States. Some of this preliminary work has already been done, but much more remains to do. In the words of an earnest writer in one of our reviews,

> Provision should be made in every State for such examinations by an impartial inspector or commission, not chosen by political intrigue or local partiality, but bringing to the work a knowledge of the subject and a spirit of intelligent humanity. We hazard nothing in predicting that the first recommendation of such inspectors would be a more strict separation and classification of prisoners, for that has always been the first result of careful examinations in congregate prisons. Probably they would next urge, as half the wardens in the country do, the importance of "commutation," or *conditional remission*; that is, the shortening of sentences for good behavior; and would insist on some effectual means of aiding discharged prisoners to find employment. They would then call for a better religious and secular instruction of the convicts while in prison, and a systematic organization of their labor. They would demand instruction in reading and writing for every prisoner in the land, and would cry out against that enforced idleness which is the curse of our jails. Along with these things, they would seek to regulate by wise rules and by frequent inspection the sanitary condition of the prisons. They would see that baths were regular, that the food was neither too good nor too bad, that cleanliness was made a religion, that the wardrobe of the prisoners was sufficient and properly changed, and that they should have an occasional holiday. They would demand that the contractor should not stand between justice and the convict; and that neither the convict nor the public should be defrauded in the payment of wages. They would point out faults in the prison officers, and specify what qualities and what experience are needful in such establishments. (North American Review, October, 1866, pp. 411–12.)

In the opinion of this committee the members of the National Prison Association should labor in all the States to secure such an inspection and supervision of the prisons, of all grades, and should make the reports of such inspectors the basis of future reforms in prison discipline. In this way, without giving up our investigation and discussion of the principles of prison administration, we may earlier reach what we all

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desire—a practical application of these principles, at least in part, to the present treatment of prisoners.

For the committee,

F. B. SANBORN,
Chairman.

NEW YORK, *January* 26, 1872.

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3. REPORT OF THE COMMITTEE ON DISCHARGED PRISONERS.

The question, what can be done for discharged prisoners? is encompassed with difficulties, and yet it is a question which concerns society no less than it does himself. With tastes depraved, with habits bad, with moral powers originally weak and made feebler by vicious indulgence, they are sent forth from our prisons with scanty pecuniary means or none at all. But worse than this, they go out with the taint of the prison upon them. Few are willing to employ them; fewer still to receive them into their homes. Instances are not rare in which men, after years of confinement, have left the prison with an honest purpose, but they have either been refused all employment, or, if they have obtained work, they have been deprived of it as soon as their antecedents have become known. Mechanics outside spurn and insult them, and farmers are unwilling to take them into their families. They have formed acquaintance in the prison, if not previously, with the vile and the wicked. Such are always ready to welcome them, and the consequence is that they fall into their hands, and soon return to criminal courses.

The committee propose to consider, in the present report, the needs of discharged prisoners; what has been done for such; what can be done for them.

I.—WHAT DO DISCHARGED PRISONERS NEED?

The first and most urgent need of the liberated prisoner is human sympathy. Without sympathy life is miserable, even to those most favorably situated. But to one who has been long deprived of it, even though the fault may have been his own, it is like a cordial to meet with some one person who is willing to forget the past, who never alludes to it, and who accepts and treats him as a brother, a man of like feelings with himself, and having a heart from which all traces of tenderness and truth have not been obliterated. Perhaps no human being ever becomes so completely hardened as to have wholly lost all the better feelings of his nature. Even among the most hackneyed and abandoned of criminals, there is still about them a softer part, which will give way to the demonstrations of tenderness and sympathy. This one element of better character survives the dissipation of all the others. Fallen as a brother may be from the moralities which once adorned him, the manifested sympathy of his fellow-men still carries a charm and a power along with it; and therefore there lies in this an operation which, as no poverty can destroy, so no depravity can extinguish. These better feelings should, therefore, be developed and cultivated to the utmost degree possible. They furnish ground of hope that even the most abandoned may be reclaimed and regenerated. Christian men, and especially Christian women, will find an ample field for labor in this direction.

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The second need of the discharged prisoner is pecuniary help. Some money he must have, or a life of crime becomes a necessity. A portion of the earnings of every convict should belong to him, and should be retained for his use after liberation. Until this provision is accorded, which is equally the dictate of justice and policy, some assistance should be provided by the benevolent, enough at least to enable him to "make a start in the world."

The third need of the discharged prisoner is employment. Such persons should, at the earliest practicable moment after their discharge, be placed in a position to help themselves. In this way only can a feeling of independence, which is essential to self-respect, be generated, and their own inward force of character be developed and strengthened.

The fourth need of the liberated convict is wise and affectionate counsel. This indeed will be of little value unless his other wants are supplied. It is useless to give a man advice while you leave him hungry and shivering, with nothing to do; but give him food, clothing, and work, and he will be in better condition to appreciate your counsels, and more willing to act upon them.

II.—What has been done for discharged prisoners?

The committee would here state that in 1869 the French government instituted a special commission to study the question how best to dispose of discharged prisoners. M. Demetz, founder and director of the agricultural colony of Mettray, one of the members of the imperial commission, addressed a letter of inquiry to the Prison Association of New York. This letter was answered by our corresponding secretary, at that time holding the same position in the New York association. In his communication to M. Demetz, the secretary reviewed at much length the provisions and efforts made in the several States of our own country for the relief and care of liberated prisoners, basing his review on information derived from answers to numerous circulars sent out to gentlemen best informed upon this subject in their respective States. In the following exhibit, the committee will not hesitate to draw freely from the paper addressed by the secretary to M. Demetz.

Massachusetts leads all the States of the Union in the care she takes for her liberated prisoners, and the efforts she puts forth to save them from falling back into crime. In this State there has long existed a society in aid of discharged prisoners, which, with an appropriation from the State, supports an agent to look after such convicts as are discharged from the State prison. He also does something for the men discharged from the minor prisons of the counties; but this is only incidental. His chief work is among the State prisoners, and for them he does much good in procuring employment, &c. This State agency for aiding discharged convicts has existed more than twenty years. It has proved the salvation of large numbers of the class for whom it was created. It is the practice of the agent to call often at the State prison to obtain information concerning the prisoners who are about to be discharged. He sees them personally, and confers with them concerning their wishes and intentions. In this way he gains a knowledge of their history, character, capabilities, and wants, which aid him essentially in finding the right employment for them, and adopting the best means to secure them against relapsing. The number aided during the years 1866 to 1869 was five hundred and sixty-two. Of these one hundred and seven were provided with places; eighty-nine were supplied with tools with which to start a little business of their own; and one hun-

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dred and sixty-seven were furnished with means to return to their friends, or to seek employment in other and more distant parts of the country. It is the policy of the agent to keep trace of the men aided as far as possible. In the majority of cases the results are gratifying. Letters are often received, full of gratitude, and ascribing their good resolutions, hopes, efforts, and success to the help given them by the agency. Employers, also, are generally satisfied with service rendered by these liberated prisoners. In proof of this, the agent mentions several firms in Boston, who have from a dozen to twenty discharged convicts, each, constantly at work for them, and cases occur in which these convicts are placed over large gangs of men as foremen, a trust to which they are found perfectly competent, and which they discharge in a satisfactory manner. Some of his men the agent reports as utterly incapable, except when under the constant and watchful care of judicious friends, of resisting the temptation to do wrong. Threats, entreaties, counsel, appeal, kindness, rewards, are all lost upon them. Happily such cases are comparatively few. He finds that the great majority, under proper treatment, can be made men among men, an honor to themselves and a blessing to the community.

There are two societies of ladies, one in Springfield and the other in Boston, which provide for a few of the discharged female prisoners. That at Springfield, however, is for friendless women and children in general; not specially for prisoners, of whom it receives only now and then one. It is different with the society at Boston, which is designed for the relief and reformation of discharged female prisoners only. Their establishment, called a Temporary Asylum for Discharged Female Prisoners, is at Dedham, one of the suburbs of the city. The society has had under treatment, during its six years of existence, two hundred and eighty-seven women, all of them outcasts from society, because they had been imprisoned criminals. But at the asylum they find a refuge and a home. They are neatly clothed, comfortably fed, and treated with a motherly love and kindness. They receive instruction in the common branches of learning, and careful training in the principles and duties of the Christian life. They are taught to work, that they may have the power as well as the will to earn an honest living. And what is the result? Some find the restraints of the place too irksome, and leave it in disgust. To others it proves a true Bethesda, in whose healing waters the sickness of the soul finds a perfect cure. Ninety three families have had servants from the asylum. More applications are received than can be met, so that employers have greater difficulty in securing women than the women have in getting places.* The ladies express the belief that but for their timely interposition, scarcely one of these two hundred and eighty-seven fallen sisters would have been arrested in her downward course; but all would have gone on sinning themselves and dragging others with them—a blot, a burden, and a curse to society. What a noble charity is that which has rescued and saved the major part of them! Surely these Christian women are treading in the very footprints of the Son of God, who came to seek the wanderer and to save the lost—the sinning, the lowly, the poor in spirit, the broken in heart; the very meanest of whom He named his brother, his sister, his friend!

Such are the provisions made in Massachusetts for liberated adults, male and female. Of late a new officer has been appointed by the State to look after the children who go out from the reformatories and schools for poor and truant children. He is called the visiting agent, and his duties are numerous and important. This is undoubtedly the most active and noteworthy of the means employed by Massachusetts to provide

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for and shield her liberated juveniles. When the law creating this agency is completely carried out by a suitable and efficient machinery, it will, beyond a doubt, operate as a powerful check to juvenile delinquency in that State, and similar agencies established in all our States would constitute a more effective restraint upon youthful transgression than any system known to the committee in this country.

In the State of New York there are but two organized agencies which give attention to discharged prisoners of adult age—the Prison Association of New York and the Women's Prison Association and Home. The latter was originally organized as a department of the former, during the first year of its existence; but after a time it appears to have been judged that the work could be better carried on through distinct organizations, and a separation took place. Since the separation, as before, the ladies who constitute the women's association have cultivated their hard field with diligence, and a fair measure of success. They have had under treatment at their home, altogether, some three thousand women, the average daily number being about thirty. These have been mainly, though not wholly, persons discharged from prisons; more, however, from prisons of a lower than of a higher grade—misdemeanants rather than felons. One-sixth of those received have either left without permission, or been discharged as incorrigible. Of the remainder, the major part have been placed at service, and most of these favorably reported of by their employers. The entire annual cost of each has not exceeded one hundred dollars, and one-fourth of this sum has, on an average, been met by her earnings.

The object mainly contemplated in founding the New York Prison Association was to assist discharged convicts, and encourage them in their efforts to reform and live honestly. But other ends were intended as well, particularly the improvement of prison discipline and attention to persons under arrest who were held for trial or examination. The main strength of the association has been given to the last two objects, not from any undervaluation of the first, but from the want of means to prosecute it with due vigor. Still, in the aggregate, much has been accomplished. During the twenty-seven years of its existence, the association, besides relief to still greater numbers in the form of clothing, board, tools, traveling expenses, &c., has procured permanent situations at work for more than four thousand liberated prisoners; and, according to the best information attainable, not more than a tenth of these have relapsed into crime, while the remaining nine-tenths have become upright, industrious, useful members of society. But this is little when compared with the work to be done. The number annually discharged from the State prisons exceeds one thousand, while the number released from houses of correction, here called penitentiaries, can hardly be less. With adequate machinery, faithfully and skillfully worked, it is believed that no inconsiderable proportion of these unfortunate and criminal men might be saved. The time immediately following a prisoner's discharge is the critical moment with him. The great point is to bridge the gulf that lies between him and honest bread. That passed, if he really desire to reform, he is safe.

As regards those discharged from the juvenile reformatories: The sentences here are during minority, which means till reformed. There are four large reformatories in the State—three of them in the city of New York—besides a reform school-ship. They all have what are called "indenturing committees." The whole business of discharging inmates from the institutions is placed in the hands of these committees, who either return them to their parents, if their own homes are deemed

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suitable, or, if not, find homes for them elsewhere. The common way is to indenture the boys to farmers, mechanics, or tradesmen; while the girls are generally placed at domestic service in respectable families. Much pains is taken to find suitable homes for the liberated, where the good work of reformation, supposed to have been well advanced in the refuge, may be carried forward to completion. The customary contract with persons to whom the children are indentured is suitable support as to food and clothing, a certain number of months' schooling each year, and a hundred dollars, (500 francs,) with a good outfit of clothes, on reaching majority, to start in life with. The institutions keep watch and ward over their *élèves* after their departure from their precincts, never losing their grasp and guardianship of them, so long as they remain under age. The chaplain of the mother-reformatory of this country—the New York House of Refuge—visits each year, at their new homes, as many of the inmates thus placed as his time will permit; and particularly, when the parents of children, judged to be reformed, desire to have such children restored to themselves, he goes to their homes if they are in or near the city, to learn from personal inspection whether it would be safe and proper to return them there; and he reports to the indenturing committee, for their guidance, the result of his inquiries. More commonly than otherwise, the homes of the parents turn out to be unsuitable places for the reception and residence of the children, and other homes have to be sought for them.

Two of the reformatories of New York—the Juvenile Asylum and Catholic Protectory—have each an agency in the great West, whither large numbers of their inmates are sent, and by which they are distributed through the mighty valley of the Mississippi. These agencies maintain a constant and active supervision over the wards of their respective institutions, visiting them at their homes, adjusting difficulties between them and their employers, seeking new homes for those who have been improperly placed, and, in general, shielding them, as far as possible, from hurtful influences, and guarding their interests against the encroachments of injustice. A recent report of the agency of the Juvenile Asylum states that of twenty-eight boys and girls sent to Tazewell County, Illinois, in 1858, five had returned to New York, four had been killed in the late war for the Union, and the remaining nineteen, who had remained at the West, were all doing well; and the most of them were married and settled in life. The protectory has a farm connected with its agency on which the children work until they are provided with places.

New Hampshire, in imitation of Massachusetts, instituted, in 1867, a State agency to aid discharged convicts. It remained in existence for only two years. During its continuance, it appears to have been highly successful in promoting the object of its creation. The agent, in his last report, states that, of the prisoners discharged during the year covered by the report, nearly all had found employment at once; that quite a number had obtained work in the town where the prison is situated; that they are earning good wages; that their employers are satisfied with their service and their conduct; and that, of the forty-three discharged during the year, only one had been returned to prison; and of the remaining forty-two, but one had been charged with or even suspected of crime. Since the abolishment of the State agency, a prisoners' aid society has been organized which, the committee is informed, is doing a good work in caring for discharged prisoners.

In Rhode Island there has been, for many years, an efficient Sunday-school in the State prison, consisting of some twenty classes, which are

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taught by a devoted band of volunteer workers, male and female. These excellent ladies and gentlemen do much to aid, encourage, and reclaim the members of their several classes, not only while they continue under their instruction, but after their liberation. It has often happened that they take the released prisoner to their own homes, and care for him there till they have found employment for him. But these unorganized and isolated efforts, though useful and praiseworthy, are not found sufficient to meet the necessities of the case. Steps have recently been taken looking to the formation of a prison association for the State.

Mr. Woodbury, superintendent of the State reform school of Maine, says that, in his institution, when boys have no suitable home of their own, they endeavor to find one for them; that henceforth they propose to safely invest for this class of boys a portion of their earnings, so that, when they reach ther majority, they may have a little capital to start with; and that he is of the opinion that the most effective way to save the liberated from a relapse is to impress upon our penal institutions a more distinctly reformatory character, by grading the prisons and classifying the prisoners, by establishing schools, creating libraries, instituting lectures, enlarging the religious agencies, giving a greater breadth and higher development to industrial training, and, in general, to cite his own words, by "studying and imitating the life and character of Him who came to seek and save lost men." Then he would have "only those discharged who showed a fitness to return to society;" that is, he would have the sentences run till reformation is assured. Mr. Rice, warden of the Maine State prison, writes, that "this State has yet made no provision whatever for aiding discharged convicts." It is remarkable, that he then goes on to sketch a prison system substantially the same as that outlined by Mr. Woodbury, and closes with this declaration: "In my opinion, such a course of discipline and instruction would so well prepare convicts to meet and withstand the temptations of the outside world as to obviate, in a great measure at least, the necessity of any special provision for assisting them on their liberation."

The Rev. Mr. Butler, chaplain of the State prison of Vermont, says that in that State nothing has been done and nothing is proposed to be done, either by the State or by any philanthropic association, beyond the suit of clothes and the two dollars given by the State to every convict as he leaves, and occasionally a little private assistance, afforded in special cases. With this meager outfit of clothing, and this miserable dole of money, the released prisoner goes back to society to shift for himself among the people who, at first, will, for the most part, have as little to do with him as possible. Could a more effectual method be devised to obstruct his reformation, and to give effect to the principle, "once a criminal, always a criminal?" Mr. Butler marvels at the prevalent apathy on this subject, but says that it is as profound as it is inexplicable.

The committee are not informed what provision, if any, is made in Connecticut to save adult convicts who have been discharged from prison. Dr. Hatch, superintendent of the reform school for boys, says: "We return, at our expense, all boys to their homes; or, if they have no homes, we find places for them to work, and support them till able to support themselves."

What the committee has learned regarding the care, or, to speak more truly, the almost utter want of care, for discharged prisoners in New Jersey, is very sad. While a few excite the sympathy of friends and receive some aid, to the mass no word of counsel or cheer is spoken, no act of kindness done by any benevolent association; and neither State,

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county, or municipality takes any thought of them, till they come again within the clutches of the law. It is a relief to know that, with respect to the boys sent out from the reform school, the case is different. When they attain the grade of "honor," which, by continuous good conduct, they may do in a year, they are considered eligible for a situation in society. The superintendent is careful to place them where they will be surrounded with good influences, and where they remain, till of age, wards of the institution.

In Pennsylvania, the Society for Alleviating the Miseries of Public Prisons, whose benevolent and useful labors date their commencement from the year 1787, has done and is doing much in aid of discharged convicts. In a late report the managers say: "Larger provision should be made for discharged convicts. They need pecuniary aid; they need advice; and they need protection and patronage. Our society has given much attention to this subject. But its plans and efforts have been restricted to its own sphere of action, and the results of its labors have been gratifying, though necessarily limited." One very interesting case is cited in the report—that of a man who received his entire education in the prison. On his liberation, aided by the society, he left Philadelphia, proceeded some distance into the country, rented a house and shop, and went to work as a mechanic. To-day he has, in the language of the report, "A flourishing business, a good run of customers, a two-story house, a spring-house, wash-house and garden, feed and pasture for a cow, and two acres of ground, and is doing well—working, of course, steadily and earnestly from morning till night." In one of his letters occurs this prayer: "My God bless you all for the kind treatment and instruction which I received," which, say the board, has surely been answered, since there is "an abundant blessing in the consciousness that the labors of love have been so fruitful."

A prisoners' aid association has been for some years in existence in western Pennsylvania, with its seat at Pittsburgh. The committee, though not informed of the details of its work, believes it to be an active and useful organization.

In Maryland, a prisoners' aid association was established in April, 1869. They employ an agent, the Rev. Mr. Doll, who gives his whole time to the work; not, indeed, wholly to seeking employment and caring for discharged prisoners, but to that and other appropriate labors for their benefit. At the beginning of every month he goes to the State penitentiary and city jail, where he receives the names of all the prisoners who are to leave that month. With each he holds a personal interview, inquiring into their circumstances and purposes. They are given to understand, and, if possible, brought to feel, that they have friends who care for them, sympathize with them, and are ready, if they desire it, to hold out to them a helping hand. Procuring homes and employment is found the most difficult part of the work, owing to the distrust and prejudice generally felt toward this class of persons. Sending them out of the city to distant points, either to their own homes, or such others as may be found for them, proves to be the best service that can be rendered them, because the most efficacious in saving them. This society is very earnest and very active, and the good it accomplishes is proportional.

Ohio has no organized agency for the care and encouragement of released prisoners. The convict in the State prison gets, on his discharge, a suit of clothes and five dollars in money; that is all. The late worthy chaplain, Rev. Mr. Byers, gives some affecting instances of relapse from no other cause than the lack of the aid and sympathy needed on libera-

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tion. He says that he has known young men (who left the prison with good resolutions) to return within a few weeks, solely and indubitably because of the inadequate provision made for them by the State. He relates also the case of a reformed convict, who had been pardoned on account of his excellent conduct and the confidence it had inspired, to whom private aid had been given and good employment secured. This man, though laboring faithfully and behaving with the utmost propriety, was turned away from a respectable boarding-house, and driven by derision and ridicule from the shop in which he worked, simply because he had been a convict, "a jail-bird," as the word is.

The report is the same from Missouri—nothing done, nothing proposed to be done. A former warden of the State prison says: "During a residence in Missouri of more than the third of a century, I do not remember to have met a single man or woman whose Christian charity has been exercised to any extent in this particular field." A sorrowful testimony, this.

To the present time no organized effort has been made in Indiana for the relief and assistance of liberated prisoners; the consequence of which neglect, the committee have good authority for saying, is that a large proportion of those who are discharged from the State prisons go out to prey upon the community. The house of refuge, which has been in operation only two years, has discharged twenty-five boys, for all of whom good places have been found in private families; and this method of disposal is to be continued in the future. Earnest efforts are making in this State for a general improvement in the prison system, including an organized plan of aiding discharged convicts. Numerous relapses, arising from the want of such assistance, call loudly for improvement in this regard. With a good penitentiary system, in which the prisoners should be classified and enabled gradually to improve their condition, the intelligent friends of prison reform in that State are of the opinion that good places might be found in private families for all. In this way, they think, the liberated prisoners would be quietly absorbed into the community, and enabled to take their places therein as upright citizens.

California, a State far toward the sunset, being laved by the waters of the Pacific, has a prison commission which is full of zeal and energy, and also, like Dorcas of old, "full of good works and alms deeds done by them." They have done much for the rescue of discharged convicts, yet far less than was needed, far less than they would have done if they had been blessed with an exchequer more amply provided. Owing to the intelligent and indefatigable exertions of this association, the State of California is among the foremost of those which are struggling for an improved prison system. There is now before her legislature two propositions of great interest and importance. One of these looks to such a change in the constitution of the State as will take the administration of prisons out of the arena of politics, and impress upon it a character of stability and permanence. The other is a bill to create a State reformatory, not for juvenile delinquents, but for young criminals not exceeding thirty years of age, who have committed a first offense, and who, in the proposed prison, shall be subjected to a treatment really reformatory.

The warden of the State penitentiary of Iowa, Mr. Heisey, has individually assisted numbers of worthy prisoners, on their release, in obtaining work. Recently a prisoners' aid society has been formed, with the same object in view, and it is not doubted that the good work will now be prosecuted more efficiently because more systematically. Application will be made to the legislature for pecuniary aid, which, it is

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believed, will be granted. Mr. Heisey avers that there is great need of such an agency, since "the discharged convict is not infrequently led to the commission of crime in consequence of his inability to procure employment, through the prejudices which, on account of his incarceration in the penitentiary, and which he himself feels has forever disgraced him."

An aid society was, some years ago, formed in Joliet, the seat of the State prison of Illinois; but whether it is still in existence, or what it has accomplished in behalf of discharged prisoners, the committee is not informed.

Whether anything, and if anything, what, has been done in Michigan, in aid of discharged prisoners, the committee cannot say, having no information.

South Carolina is the only Southern State engaged in the late civil war from which information has been received upon this point. But what is true of this is substantially true of all the rest. Indeed, this is more than intimated in a letter of General Stolbrand, warden of the State penitentiary. "It is," he says, "with great regret that I must make the confession for my State that it has done nothing to help liberated convicts in their endeavors to sustain an honest life. Since my appointment, in January, 1869, to superintend this institution, I have, in some twenty or more instances, been instrumental in obtaining employment for discharged criminals; but, beyond that, I am not able to point to any steps, municipal or otherwise, in that direction. There has been no effort in this direction that I am aware of in this State, and I think not in any other Southern State; and, although only by adoption a southerner, I feel humiliated to make the statement."

Such, in substance, is the sum of the committee's knowledge of what has been done, or is now doing, in the United States for liberated prisoners. In the aggregate, it is considerable; but viewed in relation to the demands of either duty or policy, it is little.

III.—What can be and ought to be done for discharged prisoners.

It is evident, and cannot be successfully disputed, that society has not done its whole duty to the criminal when it has punished him, nor even when it has reformed him. Its obligation does not cease when it opens his prison door and bids him walk forth in freedom. Having lifted him up, it has the still further duty to aid in holding him up. Some systematic provision to this end is the essential complement of all effective reformatory punishment. In vain shall we have improved the convict in mind and heart, in vain shall we have given him a capacity and fondness for labor, if, on his discharge, he finds none to trust him, none to meet him kindly, none to offer him the opportunity of earning honest bread. Though willing to work, he can get no work to do. Though yearning to show himself worthy of association with the good and the pure, he is repelled as if contact with him were pestilential. His good purposes are defeated; his hope of redemption vanishes. What can such a one do, if he live at all, but live a criminal? What though his reformation be genuine, can it be permanent? Impossible! He will surely be clutched again by his old associates in sin, and drawn back into the abyss of crime, from which he had vainly striven to emerge. So it has been too often and too generally, and so it is still. It is, then, the clear duty of the State as such, or of the citizens in voluntary association, as it is no less clearly their true policy, after liberating their convicts, to estab-

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lish some agency whereby they may be strengthened in their good resolutions, provided with work, and, in all suitable ways, encouraged and aided in their efforts to reform and lead an honest life.

There are several ways in which the required aid may be made available; not all, probably, equally good, but all having their special points of merit, and all very much better than nothing.

There is, first, the plan of a State agency. This has been tried for many years in Massachusetts, and has stood the test of experiment. It was tried for two years in New Hampshire, where it appeared to yield valuable results. Some other States, as Rhode Island and New Jersey, have sought, but without success, to introduce the system. It does not, therefore, appear to be a plan likely to take root very widely, and some other, better adapted to the genius of our people, must be adopted instead.

There is, then, secondly, the plan of voluntary associations, which seems better to meet, if not the necessities of the case, at least the tastes and proclivities of our citizens. The results of this system, so far as it has been applied, have been excellent. The system, to a certain extent, has been tried in New York, Pennsylvania, Maryland, and California. Abroad, especially in England and France, it has been tested much more extensively, and has, both in this country and others, proved the salvation of thousands of liberated prisoners. It is the wish and will be the effort of the National Prison Association to secure efficient working organizations in all our States which will charge themselves with the needful attention to this vast and vital interest of society.

There is, thirdly, the plan of a refuge or home for discharged prisoners, to be established by the State or by private citizens. In the code of reform and prison discipline, prepared for Louisiana by Edward Livingston at the instance of the legislature of that State, he provided a penal and reformatory system, embracing four classes of institutions, which he named, severally, the house of detention, the penitentiary, the school of reform, and the house of refuge and industry. This last was intended as a home for liberated prisoners, where they should find temporary employment during the period intervening between their discharge and their complete absorption into the ranks of virtuous industry in free society. After expressing the hope and belief that the discipline of the penitentiary would, in the case of the major part of the prisoners, issue in effacing previous bad impressions, in creating lasting habits of industry and virtuous pursuit, and in discharging the subject of the discipline from the prison a better, wiser, and happier man, Mr. Livingston adds these solemn and weighty words: "But these happy effects will be counteracted, the care, labor, and expense of your reformatory discipline will have been uselessly incurred, if your proselyte to virtue and industry is to have the one exposed to the seduction of his former associates and the other rendered useless by the want of means to exert it. It will be in vain that you have given him the skill necessary for his support if no one will afford him an opportunity of using it, or that you have made him an honest man if all the world avoids him as a villain. His relapse is certain, unavoidable, and his depravity will be the greater, from the experience that reformation has been productive only of distrust, want, and misery. 'Seven evil spirits' will take possession of the mind that has been 'swept and garnished' by your discipline, and the 'the last state of that man shall be worse than the first.' To avoid this result, so destructive of the whole system, an asylum is provided in the house of refuge and industry. Here the discharged convict may find employment and subsistence,

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and receive such wages as will enable him to remove from the scenes of his past crimes, place him above temptation, confirm him in his newly acquired habits of industry, and cause him, safely to pass the dangerous and trying period between the acquisition of his liberty and restoration to the confidence of society. Independently of this resource, the industrious convict receives at his discharge a proper proportion of his surplus earnings. He receives friendly advice as to his future pursuits, and a certificate (if he has merited it) of such conduct as will entitle him to confidence. The consequences of reconviction are solemnly represented to him, and his conduct, if he remain in the neighborhood of the prison, is carefully watched, so that if he return to habits of idleness and intemperance, his career to crime may be stopped by a commitment to the house of industry as a vagrant. The cause, the temptation, or the excuse for relapse being thus removed, it is hoped that instances of return to vicious pursuits will become more rare, and that many will become useful members of society, who, under the present system, either burden it by their poverty or prey upon it by their crimes. The house of refuge is rendered the more necessary because a man of prudence will no more receive or employ a convict discharged from one of our present penitentiaries than he would shut up with his flock a wild beast escaped from its keepers. But the reformatory plan, once fairly in operation, its principles studied, developed, steadily adhered to, improved by the light of experience, and its beneficial effects upon morals perceived, the man who has undergone its purifying operation will, in time, be no longer regarded with fear and contempt, and society, by confiding in his reformation, will permit him to be honest. The house of refuge will then become less necessary, and its expense of course diminished."*

After the lapse of half a century institutions of this kind are beginning to be established in this and other countries. Two industrial homes, one for male, the other for female discharged prisoners, have been in operation for a number of years in connection with the Wakefield prison, in England. Both are prosperous pecuniarily, and are doing much good. No prisoner who has been discharged from the Wakefield jail need or can ever return to it again, on the plea that he can get no work to do. The Female Refuge at Golden Bridge, near Dublin, has had a satisfactory, and, indeed, as Mr. Commissioner Hill, of England.

* In a paragraph immediately following the above-cited passage, Mr. Livingston disposes so neatly of a common objection to skilled labor in prisons that, although the argument does not belong strictly to the subject under consideration, the committee cannot resist the impulse to transfer it to their report in a note. He remarks: "Before I quit the consideration of this establishment, it may be necessary to dispose of an objection sometimes raised to it as well as to the penitentiary—that the products of mechanical operations which may be carried on there will be sold cheaper than they can be afforded by the regular mechanic, who is burdened with the support of a family, with rent, taxes, and other charges, and thus injure the innocent in order to find employment for the guilty. This objection could only have weight if all the convicts were employed in one business, and that in a country where there is a greater supply of labor than there is a demand for it. But here the very reverse of this is the fact. Again, if all the convicts should be employed in a single occupation it must be because there is an excess of demand for that species of labor over the supply, and while that continues there can be no injury. When that demand is reduced, the business will be abandoned, both within and without the prison. As respects the public interest, there can be no doubt, for the question reduces itself to this: whether the convicts are to be maintained in idleness, or suffered to contribute by labor to their own support? And even as regards particular classes of mechanics, the same reasoning that would prevent their trade being carried on in prison would go to show that it ought to be limited without. But the best answer to the objection is, that experience has never realized any of the evils that have been apprehended."

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says, a triumphant history of twelve years, during which hundreds of liberated convicts have been saved by it from relapsing into crime. Indeed it is, we are informed, a rare thing for any female convict who has passed through it to be reconvicted and sent back to prison. Nearly all are saved. The Carlisle Memorial Refuge for Convict Women, at Winchester, corroborates the testimony of Golden Bridge. The Home for Discharged Female Prisoners, founded and managed by the New York Women's Prison Association, and the temporary asylum for the same class of persons at Dedham, Massachusetts, under the care of a society of Boston ladies, speak the same language. These facts would seem to prove, beyond dispute, the practicability and utility of such asylums, especially for women. But they should be made strictly transitional. Their whole intent and aim should be to bridge the gulf that lies between the prison and employment in general society, to provide a defense for the critical, and, to the convict who desires to reform, momentous period which follows immediately on liberation.

The intermediate prison, at Lusk, near Dublin, is an institution of essentially the same character as Mr. Livingston's house of refuge; with this difference, that its inmates are still within the grasp of their sentence, while those of the refuge have passed out of the range of its power, and of their own free will have come to enjoy the benefits of a home which has invited them to its hospitable shelter. The advantages which Mr. Livingston hoped from his refuge are, at Lusk, matters of daily experience. The intermediate prison, it will be remembered, is an essential part of the Crofton prison system, constituting its third or probationary stage.

The fourth and most essential agency for saving discharged prisoners would be an improved prison discipline, a training while in prison, which would issue, wherever such a result is possible, in a genuine and radical reformation of the convict. The committee, without going into much detail, would offer an outline of such a system as, in their judgment, would be most likely to accomplish the result indicated.

1. The reformation and rehabilitation of criminals—not vindictive suffering—should be made the supreme aim of the system.

2. Progressive classification, based on character and merit, and not on any arbitrary principle, such as age, crime, &c., should be made a fundamental principle. No better method has yet been devised to this end than that offered in the Crofton prison system, where there is—I. A penal stage, with separate imprisonment, longer or shorter, according to conduct. II. A reformatory stage, worked on the mark system, where the prisoners are advanced from class to class, as they earn such advance, giving at each step increased comfort and privilege. III. A probationary stage, into which are admitted only such as are judged to be reformed, and where the object is to test their moral soundness—the reality of their reformation. IV. A stage of conditional liberty, (ticket of leave,) in which the *reformed convict* enjoys full freedom, subject, however, to a revocation thereof, and a return to the prison, for any misconduct.

3. A system of rewards for good conduct and industry should be instituted, whereby hope shall become an ever-present and ever-active force, more potent and controlling than fear in the minds of prisoners. Such rewards should consist of: *a*, a diminution of sentence; *b*, a share by the prisoners in their earnings; *c*, a gradual withdrawal of prison restraints; and a constant increase of privileges, as they shall be earned by good conduct.

4. Greater breadth should be given to moral and religious agencies.

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5. There should be a stronger infusion of the educational element in our prison system.

6. Industrial training should have a higher development and a greater breadth.

7. Moral must be substituted for material forces in our prison discipline to the utmost extent possible.

8. Prison officers must receive a special education for their work, and prison-keeping be thus raised to the dignity of a regular calling, so that a scientific character may be given to it.

9. A probationary stage, already referred to in the second specification above, in which the training shall be more natural, and the moral cure of the delinquent can be adequately tested, must be introduced into our prison systems. This principle does not yet command universal concurrence, though the tendency of opinion sets strongly in that direction. It is singular, however, that while it has received a wide theoretical assent, the theory, so far as we are informed, has been reduced to practice nowhere except in the Irish convict prisons under the Crofton system. The reason for such a chasm, and that so generally existing, between principle and act, must be sought, no doubt, in the difficulty of bringing the two practically together, and in the further fact that a successful application of the principle requires an adjustment thereto of the other and antecedent stages of a prison system. The principle cannot possibly be incorporated, as an isolated element, into *any* prison system; but must, of necessity, come in as the complement of a system, all the parts of which are contrived and adjusted to reformation as the one great end in view. There is no prison system in our country, and probably not elsewhere, other than the one to which it originally belonged, on which this principle *could* be ingrafted, without changes so radical as to constitute a new system. Yet it is a principle so essential to a true and effective prison discipline, that, sooner or later, the changes *must* be made which will permit its introduction. There is a problem of the gravest importance, and as difficult as it is grave, on which the minds of prison reformers throughout the world are now bent with an interest that may be characterized as intense—the problem how to secure the re-absorption of released prisoners into society, without a relapse into crime. Thousands upon thousands, intent on a better life on their emergence from prison walls, fall back into transgression, simply because the ban of society is upon them; nobody trusts them, nobody will give them work, nobody will permit them to earn and eat honest bread. The solution of the problem stated above, so vital and yet so hidden, so important, and at the same time so perplexed, lies in the direction of this principle—lies, in fact, in a successful application of this principle, as a living and indispensable part of a prison system. The discharged convict, though reformed and resolved to live honestly, fails to get work; and he fails so generally that failure is the rule and success the exception. Why is this? It is not that society is hard-hearted; that it has no sympathy with misfortune; that it is vindictive and cruel; that it tramples upon a man merely because he is down. Far from it; but society *distrusts* the liberated prisoner; it has no *confidence* in him; and, what is yet more to the purpose, it has *no guarantee for its confidence.* It is this *want of a guarantee* that builds a wall of granite between the convict on his release and remunerative employment. Conquer the distrust of society, replace that distrust with confidence, furnish the needed guarantee that the man is trustworthy, and every difficulty will vanish; every shop, every factory, every farm, every avenue of honest toil will be open to his entrance. But the prob-

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lem is *how* to abate the prejudice which society feels toward the liberated convict; *how* to overcome the dread which it has of him; *how* to allay its fears; *how* to win for him its confidence and conciliate its regard. There is but one way to accomplish this result. The convict must furnish *proof* during his incarceration that it is safe to confide in him; safe to put him at the work-bench; safe to place in his hands "the shovel and the hoe;" safe to admit him to the intimacy of the fireside and the home circle. In other words, he must be tried, his cure must be tested, before he is discharged. But this can *never* be done where the system of imprisonment is one of material isolation to the end; neither can it any more be done where the system of imprisonment is one of moral isolation to the end. There must be a field, an opportunity for the trial. But such a theater and such a chance the separate system can *never* furnish; nor any more can the congregate system, on its present basis. Both our existing systems must be in part retained, in part discarded, in part changed; and so changed that the passage from imprisonment to liberty shall not be, as now, *per saltum*, by a single bound; but the change must be such that the former shall gradually, almost imperceptibly, melt into the latter; such that the latter part of the imprisonment shall be little more than moral, in which, as far as may be, all the arrangements shall be those of ordinary life, with its trusts, its temptations, its responsibilities, its victories over self and sin, its toning up and strengthening of the character by the friction to which the man is in these various ways subjected. Or, to sum up all in one word, the *principle* of the Crofton "intermediate prison," in the form which it has in Ireland, or some other, must be impressed upon *our* system of imprisonment, where, doubtless, it will yield the same precious fruit that it does in the country in which the idea was first conceived and applied. "The same precious fruit." What fruit? The conquest of distrust, the implantation of confidence toward liberated prisoners. And has that result been achieved? Yes, to the fullest extent. What was thought to be an impossibility—what is yet so regarded by many—has become a living fact. In Ireland the labor of discharged convicts, which, fifteen years ago, was spurned as a gift, is to-day eagerly sought.

CHARLES COFFIN,
Chairman.

The committee believe that prisoners prepared for discharge under the influences of a prison system such as that sketched above would readily find employment, and be re-absorbed into free and virtuous society; and thus would be solved a problem which has been regarded as one of the most difficult and perplexing in penitentiary science.

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4. REPORT OF THE COMMITTEE ON JUVENILE DELINQUENCY.

The subjects on which this committee are called upon to report are so vast and complicated, and the time of the convention is so limited, that we have felt it most advisable to present but one portion of the great work being performed in the country in behalf of our unfortunate or criminal youth, and that is, the *prerentire measures*, which naturally often receive less attention in such assemblies than the more imposing labors of reformation.

Moreover, on this latter field, the National Prison Association, or, to

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speak more precisely, the national congress, which is the parent of the association, has already listened, on a previous occasion, to very lucid and able papers, and to no less clear and instructive discussions.

We shall confine ourselves in the present paper to an examination of certain sources of juvenile crime, not usually much considered, treating briefly of others which have been often and ably discussed; and then shall give a brief *résumé* of certain preventive measures in New York—which may be found of much value if adopted in other cities—and the results of these extended movements on the records and statistics of juvenile crime.

If certain aspects of our subject seem too briefly dealt with, the association will consider the brief time allowed for such important discussions.

THE CAUSES OF JUVENILE CRIME.

The great practical division of causes of crime may be made into preventable and non-preventable. Among the preventable, or those which can be in good part removed, may be placed: Ignorance, intemperance, overcrowding of population, want of work, idleness, vagrancy, the weakness of the marriage tie, and bad legislation.

Among those which cannot be entirely removed are inheritance, the effects of emigration, orphanage, accident, or misfortune, the strength of the sexual and other passions, and a natural weakness of moral or mental powers.

In treating these in this paper we shall pass over ignorance, orphanage, want of work, and the effects of emigration, and shall omit entirely the great and terrible source of crime, intemperance, as these have all been so exhaustively and ably discussed in previous sessions of the prison association. The principal consideration will be given in this paper to "the weakness of the marriage tie" as a cause of crime; to inheritance, and to overcrowding, especially in New York, as a prolific source of juvenile crimes.

WEAKNESS OF THE MARRIAGE TIE.

It is extraordinary among the lower classes in how large a number of cases a second marriage, or the breaking of marriage, is the immediate cause of crime or vagrancy among the children. When questioning a homeless boy or street-wandering girl as to their former home, it is extremely common to hear either, "I couldn't get on with my step-mother," or, "My step-father treated me badly," or, "My father left, and we just took care of ourselves." These apparently exceptional events are so common in these classes as to fairly constitute them an important cause of juvenile crime. When one remembers the number of happy second marriages within one's acquaintance, and how many children have never felt the difference between their step-mother and their own mother, and what love, and patience, and self-sacrifice are shown by parents to their step-children, we may be surprised at the contrast in another class of the community; but the virtues of the poor spring very much from their affections and instincts; they have comparatively little self-control; the high lessons of duty and consideration for others are seldom stamped on them; and religion does not much influence their more delicate relations with those associated with them. They might shelter a strange orphan for years with the greatest kindness, but the bearing and forbearing with the faults of another person's child year after year, merely from motives of duty or affection to its parent, belong to a higher range

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of Christian virtues, to which they seldom attain. Their own want of self-control and their tendency to jealousy, and little understanding of true self-sacrifice, combine to weaken and embitter these relations with step-children. The children themselves have plenty of faults, and have doubtless been little governed, so that soon both parties jar and rub against one another, and, as neither have instincts or affections to fall back upon, mere principle or sense of duty is not enough to restrain them. What would be simply slights or jars in more controlled persons become collisions with this class.

Bitter quarrels spring up between step-son and mother or step-daughter and father; the other parent sometimes sides with the child, sometimes with his partner, but the result is similar. The house becomes a kind of pandemonium, and the girls rush desperately forth to the wild life of the streets, or the boys gradually prefer the roaming existence of the little city Arab to such a quarrelsome home. Thus it happens that step-children among the poor are so often criminals or outcasts.

It needs a number of years among the lowest working classes to understand what a force public opinion is, in all classes, in keeping the marriage bond sacred, and what sweeping misfortunes follow its violation. Many of the Irish peasants who have landed here have married from pure affection. Their marriage has been consecrated by the most solemn ceremonies of their church. They come of a people peculiarly faithful to the marriage tie, and whose religion has especially guarded female purity and the fidelity of husband and wife. At home, in their native villages, they would have died sooner than break the bond or leave their wives. The social atmosphere about them, and the influence of their priests, make such an act almost impossible. And yet, in this distant country, away from their neighbors and their religious instructors, they are continually making a practical test of "free-love" doctrines. As the wife grows old or ugly, as children increase and weigh the parents down, as the homes become more noisy and less pleasant, the man begins to forget the vows made at the altar and the blooming girl he then took, and perhaps meeting some prettier woman or hearing of some chance for work at a distance, he slips quietly away, and the deserted wife, who seems to love him the more the more false he is, is left alone. For a time she has faith in him and seeks him far and near, but, at length, she abandons hope and begins the heavy struggle of maintaining her little family herself. The boys gradually get beyond her control; they are kept in the street to earn something for their support; they become wild and vagrant, and soon end with being street-rovers, or petty thieves, or young criminals. The girls are trained in beggary or peddling, and, meeting with bold company, they gradually learn the manners and morals of the streets, and after a while abandon the wretched home and break what was left of the poor mother's hope and courage by beginning a life of shame. This sad history is lived out every day in New York. If any theorists desire to see what fruits "free-love" or a weak marriage bond can bear among the lowest working classes, they have only to trace the histories of great numbers of the young thieves and outcasts and prostitutes in this city. With the dangerous classes "elective affinities" are most honestly followed. The results are suffering, crime, want, and degradation to those who are innocent.

INHERITANCE.

A most powerful and continual source of crime with the young is inheritance, the transmitted tendencies and qualities of their parents,

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or of several generations of ancestors. It is well known to those familiar with the criminal classes that certain appetites or habits, if indulged abnormally and excessively through two or more generations, come to have an almost irrisistible force, and no doubt do modify the brain so as to constitute almost an insane condition. This is especially true of the appetite for liquor, and of sexual passion, and sometimes of the peculiar weakness, dependence, and laziness, which make confirmed paupers. The writer knows of one instance, in an alms-house in western New York, where four generations of females were paupers and prostitutes. Almost every reader who is familiar with village life will recall poor families which have had dissolute or criminal members beyond the memory of the oldest inhabitant, and who still continue to breed such characters. I have known a child of nine or ten given up, apparently beyond control, to licentious habits and desires, and who in all different circumstances seemed to show the same tendencies; her mother had been of similar character, and quite likely her grandmother. The "gemmules," or latent tendencies, or forces, or cells, of her immediate ancestors were in her system and working in her blood, producing irrisistible effects on her brain, nerves, and mental emotions, and finally, not being met early enough by other moral, mental, and physical influences, they have modified her organization until her will is scarcely able to control them, and she gives herself up to them. All those who instruct in or govern houses of refuge, or reform schools, or asylums for criminal children and youth, will recall many such instances. They are much better known in the Old World than in this; they are far more common here in the country than the city. My own experience during twenty years has been in this regard singularly hopeful. I have watched great numbers of degraded families in New York, and exceedingly few of them have transmitted new generations of paupers, criminals, or vagrants. The causes of this encouraging state of things are not obscure. The action of the great law of "natural selection," in regard to the human race, is always toward temperance and virtue. That is, vice and extreme indulgence weaken the physical powers and undermine the constitution. They impair the faculties by which man struggles with adverse conditions, and gets beyond the reach of poverty and want. The vicious, and sensual, and drunken die earlier, or they have fewer children, or their children are carried off by diseases more frequently, or they themselves are unable to resist or prevent poverty and suffering. As a consequence, in the lowest class, the more self-controlled and virtuous tend constantly to survive, and to prevail in "the struggle for existence" over the vicious and ungoverned, and to transmit their progeny. The natural drift among the poor is toward virtue. Probably no vicious organization with very extreme and abnormal tendencies is transmitted beyond the fourth generation; it ends in insanity, or *crétinism*, or the wildest crime. The result is then, with the worst endowed families, that the "gemmules," or latent forces of hundreds of virtuous, or at least not vicious generations, lie hid in their constitution. The immediate influences of parents or grand-parents are of course the strongest in inheritance: but these may be overcome, and the latent tendencies to good, coming down from remote ancestors, be aroused and developed.

Thus is explained the extraordinary improvement of the children of crime and poverty in our industrial schools, and the reforms and happy changes seen in the boys and girls of our dangerous classes, when placed in kind western homes. The change of circumstances, the improved food, the daily moral and mental influences, the effect of regular labor

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and discipline, and, above all, the power of religion, awaken these hidden tendencies to good, both those coming from many generations of comparative virtue and those inherent in the soul, while they control and weaken, and cause to be forgotten, those diseased appetites or extreme passions which these unfortunate creatures inherit directly, and substitute a higher moral sense for the low moral instincts which they obtained from their parents. So it happens, also, that American life, as compared with European, and city life as compared with country, produces similar results. In the United States a boundless hope pervades all classes; it reaches down to the outcast and vagrant. There is no fixity, as is so often the fact in Europe, from the sense of despair. Every individual, at least till he is old, hopes and expects to rise out of his condition.

The daughter of the rag-picker or vagrant sees the children she knows continually dressing better or associating with more decent people; she beholds them attending the public schools and improving in education and manners; she comes in contact with the greatest force the poor know—public opinion, which requires a certain decency and respectability among themselves; she becomes ashamed of her squalid, ragged, or drunken mother; she enters an industrial school, or creeps into a ward school, or "goes out" as a servant. In every place she feels the profound forces of American life; the desire of equality; ambition to rise; the sense of self-respect, and the passion for education.

These new desires overcome the low appetites in her blood, and she continually rises and improves. If religion in any form reach her, she attains a still greater height over the sensual and filthy ways of her parents. She is in no danger of sexual degradation or any extreme vice. The poison in her blood has found an antidote. When she marries, it will inevitably be with a class above her own. This process goes on continually throughout the country and breaks up criminal inheritance. Moreover, the incessant change of our people, especially in cities; the separation of children from parents, of brothers from sisters, and of all from their former localities, destroy that continuity of influence which bad parents and grandparents exert, and does away with those neighborhoods of crime and pauperism where vice concentrates and transmits itself with ever-increasing power. The fact that tenants must forever be "moving" in New York is a preventive of some of the worst evils among the lower poor.

The mill of American life, which grinds up so many delicate and fragile things, has its uses, when it is turned on the vicious fragments of the lowest strata of society.

Villages, which are more stable and conservative, and tend to keep families together more, and in the same neighborhoods, show more instances of inherited and concentrated wickedness and idleness. I think we have, in New York, comparatively little of successive generations of paupers, criminals, and vagrants. The families are constantly broken up; some members improve; some die out, but they do not transmit a progeny of crime.

Among those public influences on the young, it has been often a question with some whether the public schools did not educate the daughters of the poor too much, and thus make them discontented with their condition and exposed to temptation.

It is said that these working-girls, seeing such fine dresses about them, and learning many useless accomplishments, have become indifferent to steady hard labor, and have sought in vice for the luxuries which they first learned to know in the public schools. My own observations, however, lead me to doubt whether this occurs unless

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as an exceptional fact. The influence of discipline and regular instruction is against the style of character which makes the prostitute. Where there is a habit of work, there is seldom the laziness and shiftlessness which especially cause or stimulate sexual vice. Some working-girls do, no doubt, become discontented with their former condition, and some rise to a much higher, while some fail; but this happens everywhere in the United States, and is not to be traced especially to the influence of our free schools.

We have spoken of the greater tendency of large cities, as compared with villages, in breaking up vicious families. There is another advantage of cities in this matter. The especial virtue of a village community is the self-respect and personal independence of its members. No benefits of charity or benevolent assistance and dependence could ever outweigh this. But this very virtue tends to keep a wicked or idle family in its present condition. The neighbors are not in the habit of interfering with it; no one advises or warns it; the children grow up as other people's children do, in the way the parents prefer; there is no machinery of charity to lift them out of the slime; and if any of their wealthier neighbors, from motives of benevolence, visited the house and attempted to improve or educate the family, the effort would be resented or misconstrued. The whole family become a kind of *pariahs;* they are morally tabooed, and grow up in a vicious atmosphere of their own, and really come out much worse than a similar family in the city. This phenomenon is only a natural effect of the best virtues of the worst community.

In a large town, on the other hand, there exist machinery and organization through which benevolent and religious persons can approach such families, and their good intentions not be suspected or resented. The poor people themselves are not so independent, and accept advice or warning more readily. They are not stamped in public repute with a bad name; less is known of them; and the children under new influences break off from the vicious career of their parents and grow up as honest and industrious persons. Moreover, the existence of so much charitable organization in the cities brings the best talent and character of the fortunate classes to bear directly on the unfortunate, far more than is the fact in villages.

OVERCROWDING.

The source of juvenile crime and misery in New York which is the most formidable, and at the same time the most difficult to remove, is the overcrowding of our population. The form of the city site is such—the majority of the dwellings being crowded into a narrow island between two water-fronts—that space near the business portions of the city becomes of great value. These districts are necessarily sought for by the laboring and mechanic classes, as they are near the places of employment. They are avoided by the wealthy on account of the population which has already occupied so much of them. The result is that the poor must live in certain wards, and as space is costly the landlords supply them with (comparatively) cheap dwellings, by building very high and large houses, in which great numbers of people rent only rooms instead of dwellings.

Were New York a city radiating from a center over an almost unlimited space, as Philadelphia, for instance, the laborers or the mechanics might take up their abode anywhere, and land would be comparatively cheap, so that that blessing of the laboring class would be attainable, of separate homes for each family.

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But on this narrow island business is so peculiarly constructed, and population is so much forced to one exit—toward the north—and the poor have such a singular objection to living beyond a ferry, that space will inevitably continue very dear in New York, and the laboring classes will be compelled to occupy it.

To add to the unavoidable costliness of ground-room on this island, has come in the effect of bad government.

It is one of the most unpleasant experiences of the student of political economy that the axioms of his science can so seldom be understood by the masses, though their interests be vitally affected by them.

Thus every thoughtful man knows that each "new job" among city officials, each act of plunder of public property by members of the municipal government, every loss of income or mal-appropriation or extravagance in the city's funds, must be paid for by taxation, and that taxation always falls heaviest on labor.

The laboring classes of this city rule it, and through their especial leaders are the great public losses and wastefulness occasioned. Yet they never know that they themselves pay for these continually in increased rents. Every landlord charges his advanced taxation in rent, and probably a profit on that. The tenant pays more for his room; the grocer more for his shop; the butcher and tailor and shoemaker and every retailer has heavier expenses from the advance in rents, and each and all charge it on their customers. The poor feel the final pressure. The painful effect has been that the expense for rent has risen enormously with the laboring classes of this city during the last five years, while many others of the living expenses have nearly returned to the standard before the war.

The influence of high rents is to force more people into a given space, in order to economize and divide expense.

The latest trustworthy statistics on this important subject are from the excellent reports of the Metropolitan Board of Health for 1866. From these it appears that the First ward of this city, with a population of 58,953, has a rate of population of 196,510 to the square mile, or 16.1 square yards to each person; the —— ward, with 31,537 population, has a rate of 185,512 to the square mile, or 17.2 yards to each; the Seventeenth ward, with 79,563, has the rate of 153,006; the Fourteenth ward, with 23,382, has a rate of 155,880; the Thirteenth ward, with 26,388, has 155,224; and so on with others, though in less proportion. The worst districts in London do not at all equal this crowding of population.

Thus East London shows the rate of 175,816 to the square mile; the Strand, 161,556; Saint Luke's, 151,104; Holborn, 148,705, and Saint James, Westminster, 144,008.

If particular districts of our city be taken, they present an even greater massing of human beings than the above averages have shown. Thus, according to the report of the council of hygiene in 1865, the tenant-house and cellar population of the Fifteenth ward numbered 17,611, packed in buildings over a space less than thirty acres, exclusive of streets, which would make the fearful rate of 290,000 to the square mile. In the Seventeenth ward, the board of health reports that in 1868 4,120 houses contained 95,091 inhabitants, of whom 14,016 were children under five years. In the same report, the number of tenement houses for the whole city is given at 18,582, with an estimate of one-half the whole population dwelling in them, say 500,000. We quote an extract from a report of a visitor of the Children's Aid Society of the First ward describing the condition of a tenement house:

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What do you think of the moral atmosphere of the home I am about to describe below?

To such a home two of our boys return nightly. In a dark cellar, filled with smoke, there sleep, all in one room, with no kind of partition dividing them, two men and their wives, a girl of thirteen or fourteen, two men and a large boy of about seventeen years of age, a mother with two more boys, one about ten years old and one large boy of fifteen; another woman with two boys, nine and eleven years of age—in all, *fourteen persons*.

This room I have often visited, and the number enumerated probably falls below rather than above the average that sleep there.

It need not be said that with overcrowding such as this there is always disease, and as naturally crime. The privacy of a home is undoubtedly one of the most favorable conditions to virtue—especially in a girl. If a female child be born and brought up in a room of one of these tenement houses, she loses very early the modesty which is the great shield of purity. Personal delicacy becomes almost unknown to her. Living, sleeping, and doing her work in the same apartment with men and boys of various ages, it is well-nigh impossible for her to retain any feminine reserve, and she passes, almost unconsciously, the line of purity at a very early age. In these dens of crowded humanity, too, other and more unnatural crimes are committed among those of the same blood and family.

Here, too, congregate some of the worst of the destitute population of the city—vagrants, beggars, unsuccessful thieves, broken-down drunken vagabonds who manage as yet to keep out of the station-houses, and the lowest and most bungling of the "sharpers."

Naturally the boys, growing up in such places, become, as by a law of nature, petty thieves, pick-pockets, street-rovers, beggars, and burglars. Their only salvation is that these dens become so filthy and haunted with vermin that the lads themselves leave them in disgust, preferring the barges on the breezy docks or the boxes on the sidewalk, from which eventually they are drawn into the neat and comfortable boys' lodging-houses, and there find themselves imperceptibly changed into honest and decent boys. This is the story of thousands every year. The cellar population alone of the city is a source of incessant disease and crime. And with the more respectable class of poor who occupy the better kind of tenement houses, the packing of human beings in these great caravansaries is one of the worst evils of this city.

It sows pestilence and breeds every species of criminal habits. From the eighteen thousand tenement-houses comes 73 per cent. of the mortality of our population, and we have little doubt as much as 90 per cent. of the offenses against property and person.

Overcrowding is the one great misfortune of New York. Without it we should be the healthiest large city in the world, and a great proportion of the crimes which disgrace our civilization be nipped in the bud. While this continues as it does now, there is no possibility of a thorough sanitary, moral, or religious reform in our worst wards.

Few girls can grow up to majority in such dens as exist in the First, Sixth, Eleventh, and Seventeenth wards and be virtuous; few boys can have such places as homes and not be thieves and vagabonds. In such pens, typhus and cholera will always be rife, and the death-rate reach its most terrible maximum.

While the poorest population dwell in these cellars and crowded attics, neither Sunday-schools, nor churches, nor missions, nor charities can accomplish a thorough reform.

What, then, is to be done to remedy this terrible evil? Experience has proved that our remedial agencies can, in individual cases, cure

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even the evils resulting from this unnatural condensing of population. That is, we can point to hundreds of lads and young girls who were born and reared in such crowded dens of humanity, but who have been transformed into virtuous, well-behaved, and industrious young men and women, by the quiet daily influence of our industrial schools and lodging-houses.

Still these cases of reform are in truth exceptions. The natural and legitimate influence of such massing of population is all in the direction of immorality and degeneracy. Whatever would lessen that would at once, as by a necessary law, diminish crime, and poverty, and disease. The great remedies are to be looked for in broad general provisions for distributing population.

Thus far the means of communication between business New York and the suburbs have been singularly defective. An underground railway, with cheap workmen's trains, or elevated railways, with similar conveniences, connecting Westchester County and the lower part of the city, or suburbs laid out in New Jersey or on Long Island, expressly for working people, with cheap connections with New York and Brooklyn, would soon make a vast difference in the concentration of population in our lower wards. It is true that English experience would show that laboring men, after a dreary day's work, cannot bear the jar of railway traveling. There must be, however, many varieties of labor—such as work in factories and the like, where a little movement in a railroad train at the close of a day would be a refreshment. Then as the laboring class was concentrated in suburban districts, the various occupations which attend them—such as grocers, shoemakers, tailors, and others—would follow, and be established near them.

Many nationalities among our working class have an especial fondness for gardens and patches of land about their houses. This would be an additional attraction to such settlements; and with easy and cheap communication we might soon have tens of thousands of our laborers and mechanics settled in pleasant and healthy little suburban villages, each perhaps having his own small house and garden; and the children growing up under far better influences, moral and physical, than they could possibly enjoy in tenement houses.

There are many districts within half an hour of New York where such plots could be laid out at $500 each, which would pay a handsome profit to the owner, or where a cottage could be let with advantage for the present rent of a tenement attic. Improved communications have already removed hundreds of thousands of the middle class from the city, to all the surrounding neighborhood, to the immense relief of themselves and families. Equal conveniences, suited to the wants of the laboring class, will soon cause multitudes of these to live in the suburban districts. The obstacle, however, as in all efforts at improvement for the working people, is in their own ignorance and timidity, and their love of the crowd and bustle of a city.

More remote even than relief by improved communications is a possible check to high rents by a better government. A cheap and honest government of the masses in New York would at once lower taxation and bring down rents. The enormous prices demanded for one or two small rooms in a tenement house are a measure (in part) of the cost of our city government.

Another alleviation to our overcrowding has often been proposed, but never vigorously acted upon, as we are persuaded it might be, and that is the making the link between the demand for labor in our country districts and the supply in New York closer. The success of the Chil-

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dren's Aid Society in the transfer of destitute and homeless children to homes in the West, and of the commissioners of emigration in their "Labor Exchange," indicate what might be accomplished by a grand organized movement for transferring our unemployed labor to the fields of the West. It is true they would not carry away our poorest class, yet it would relieve the pressure of population here on space, and thus give more room and occupation for all.

But admitting that we cannot entirely prevent the enormous massing of people, such as prevails in our Eleventh and Seventeenth wards, we can certainly control it by legislation.

The recent sanitary acts of New York attempt to hold in check the mode of building tenement houses, requiring certain means of ventilation and exit, forbidding the filling up the entire space between the houses with dwellings, and otherwise seeking to improve the condition of such tenement houses. There only need two steps further, in imitation of the British lodging-house acts, removing altogether the cellar population when under certain unhealthy conditions, and the other limiting by law the number who can occupy a given space in a tenement room. The British acts assign 240 cubic feet as the lowest space admissible for each tenant or lodger, and if the inspector find less space than that occupied he at once enters a complaint, and the owner or landlord is obliged to reduce the number of his occupants under strict penalties. A provision of this nature in our New York laws would break up our worst dens and scatter their tenants or lodgers.

The removal of the cellar population from a large proportion of their dwellings should also be made. Liverpool removed 20,000 cellar occupants in one year—1847—to the immense gain, both moral and sanitary, of the city. New York needs the reform quite as much. There need be no real hardship in such a measure, as the tenants could find accommodations in other parts of the city or the suburbs; and some would perhaps emigrate to the country.

One often proposed remedy for ills of our tenant-house system—the "model lodging-house," has never been fairly tried here. The theory of this agency of reform is, that if a tenement-house can be constructed on the best sanitary principles, with good ventilation, with a limited number of tenants, no overcrowding, and certain important conveniences to the lodgers, all under moral supervision, (so that tenants of notoriously bad character are excluded,) and such a house can be shown to pay, say 7 per cent. net, this will become a "model" to the builders of tenement-houses; some building after the same style because public opinion and their own conscience require it, others because competition compels it. Thus, in time, the mode of structure and occupancy of all the new tenement-houses would be changed by the "model-houses."

But to attain this desirable end, the "model houses" must first pay a profit, and a fair one. So long as they do not succeed in this they are a failure, however benevolent their object and comfortable their arrangements. In this point of view the "Wakelow houses" in London are a success, and do undoubtedly influence the mode, building, and management of private tenement-houses; in this, also, the "Peabody houses" are not a success and will have no permanent influence.

The model-houses in London for lodging single men have, as the writer witnessed, changed and elevated the whole class of similar private lodging-houses. The experiment ought to be tried here, on a purely business basis, by some of our wealthy men. The evil of crowded tenement-houses might be immensely alleviated by such a remedy.

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THE GREAT PREVENTIVE MEASURES OF NEW YORK.

The extended movements for the prevention of youthful poverty and crime which I am about very briefly to note originated in 1853 with the writer and a few other gentlemen, of whom only three or four are now living, our first treasurer, Mr. J. E. Williams, being our main-stay through all these years.

We had all been deeply moved by the terrible suffering and crime among the neglected children of this city, and resolved to form an organization devoted entirely to this subject. We took an office on the corner of Amity street and Broadway, the whole force being at first the writer and an office-boy. We organized as the Children's Aid Society of New York and were subsequently incorporated, in 1855.

From the beginning we aimed at four different objects: First and foremost, at removing, after a short probation, the floating and homeless boys and girls of the city to *places and homes in the country;* second, at opening *industrial schools and workshops* for the children of the poor, especially for little girls who had homes, but who were too ragged, dirty, irregular in attendance, or too much in want of food and clothing to attend the public schools, and who were growing up as petty thieves and little vagabonds; third, we proposed to found *lodging-houses* for the homeless children, where they could be sheltered, partly fed, instructed, brought under moral influences, and at length provided with *homes;* and fourth, to open *free reading-rooms*, as a means of improving and elevating the youth of the lowest wards.

For nearly twenty years we have steadily aimed at these various objects, through opposition, under persecution, amid the financial bankruptcy of the mercantile community on whom we depend, and during the great war for the life of the Union. The plan as it was first formed, we can modestly say, has been justified by events and blessed by Providence.

Our annual income has increased from $4,732.77 to about $175,000. We have now about seventy teachers employed, and various other agents. We have transplanted to country homes over 20,000 poor boys and girls; during the past year, 3,386. We have now nineteen industrial schools and twelve night-schools, with an aggregate attendance of 9,500 and an average of about 2,900.

We have five lodging-houses—four for boys and one for girls—with an aggregate attendance through the year of 11,928 different children, and an average of over 400 each night.

In one lodging-house alone—the newsboys'—there have been over 50,000 different boys since its opening.

There are also five reading-rooms for lads and young men under charge of the society.

For all these movements there have been expended since the foundation of the society $1,093,923.48.

From our industrial schools but the smallest proportion ever turn out criminals or paupers; probably not five out of one thousand.

Of the children sent to the country, comparatively few return to the city, and, so far as we can ascertain, a very hopefully small percentage are ever chargeable on the community or commit criminal offenses. Great numbers are now filling places of trust and usefulness throughout the country. Some are possessed of large properties, and others are thriving as teachers or in professions.

All these various branches of our preventive charity have attracted to them the most humane and enlightened men and women of the city,

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who have devoted a vast deal of labor and time and means to this work of "saving the children" from crime and pauperism.

It is to their co-operation and generous assistance, under Providence, that its success is due.

So far as is known, no other large city has founded so extensive an organization for the prevention of juvenile crime. Since our opening, a similar society was founded, at our suggestion, in Brooklyn, which has now several lodging-houses. Newsboys' lodging-houses have also been founded, in imitation of ours, in Toronto, New Orleans, Philadelphia, Washington, Chicago, and other cities. Some of them, however, have not succeeded. A new one has recently been opened in London, in Gray's Inn Court, in imitation of the New York house.

At present about one half of the income of the Childrens' Aid Society is derived from public sources and one half from private subscription.

Besides these preventive measures should be mentioned the excellent work of the Home of the Friendless, the well-known labors of the Five Points' Missions, the Howard Mission, Wilson School, and the various church and mission schools for the children of the poor.

THE RESULTS

of all these preventive and educational movements are best shown by the following statistics of juvenile crime, taken from the reports of the city prisons and the police.

CRIME CHECKED AMONG GIRLS.

We have compared especially those offenses of which children or youth are usually guilty—such as "vagrancy," which includes, undoubtedly, open prostitution, as well as homelessness and general vagabondism, "petty larceny," and "pocket-picking." The date of the year, it should be noticed, is always twelve months in advance, owing to the time of issue of the reports, so that the statistics for 1871, for instance, apply to 1870.

Of female vagrants there were imprisoned, in all our city prisons in—

1857	3,449	1863	1,756
1859	5,778	1864	1,342
1860	5,880	1869	785
1861	3,172	1870	671
1862	2,243	1871	548

We have omitted some of the years on account of want of space; they do not, however, change the steady rate of decrease in this offense.

Thus, in eleven years, the imprisonments of female vagrants have fallen off from 5,880 to 548. This surely is a good show; and yet in that period our population increased about 13½ per cent., so that, according to the usual law, the commitments should have been this year over 6,673.*

* The population of New York increased from 814,224, in 1860, to 915,520, in 1870, or only about 12½ per cent.

The increase in the previous decade was about 50 per cent. There can be no doubt that the falling off is entirely in the middle classes, who have removed to the neighboring rural districts. The classes from which most of the criminals come have undoubtedly increased, as before, at least 50 per cent.

I have retained for ten years, however, the ratio of the census, 12½ per cent.

If we turn now to the reports of the commissioners of police, the returns are almost equally encouraging, though the classification of arrests

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does not exactly correspond with that of imprisonments; that is, a person may be arrested for vagrancy, and sentenced for some other offense, and *vice versa*.

The reports of arrests of female vagrants run thus:

1861	2,161	1869	1,078
1862	2,008	1870	701
1863	1,728	1871	914
1867	1,591		

We have not, unfortunately, statistics further back than 1861.

Another crime of young girls is thieving or petty larceny. The rate of commitments runs thus for females:

1859	944	1865	977
1860	890	1869	989
1861	880	1870	746
1863	1,133	1871	572
1864	1,131		

The increase of this crime during the war. in the years 1863 and 1864, is very marked; but in twelve years it has fallen from 944 to 572, though, according to the increase of the population, it would have been naturally 1,076.

The classification of commitments of those under fifteen years only runs back a few years. The number of little girls imprisoned the past few years is as follows:

1863	403	1868	289
1864	295	1870	281
1865	275	1871	212

CRIME CHECKED AMONG THE BOYS.

The imprisonments of males for offenses which boys are likely to commit, though not so encouraging as with the girls, shows that juvenile crime is fairly under control in this city. Thus "vagrancy" must include many of the crimes of boys; under this head we find the following commitments of males:

1859	2,829	1865	1,350
1860	2,708	1870	1,140
1862	1,203	1871	994
1864	1,147		

In twelve years a reduction from 2,829 to 994, when the natural increase should have been up to 3,225.

Petty larceny is a boy's crime; the record stands thus for males:

1857	2,450	1869	2,338
1859	2,626	1870	2,168
1860	2,575	1871	1,978
1865	2,347		

A decrease in fourteen years of 502, when the natural increase should have brought the number to 2,861.

Of boys under fifteen imprisoned, the record stands thus since the new classification:

1864	1,965	1870	1,625
1865	1,934	1871	1,017
1869	1,872		

Of males between fifteen and twenty, in our city prisons, the following is the record:

1857	2,592	1868	2,927
1859	2,636	1870	2,876
1860	2,207	1871	2,936
1861	2,408		

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It often happens that youthful criminals are arrested who are not imprisoned. The reports of the board of police will give us other indications that, even here, juvenile crime has at length been diminished in its sources.

ARRESTS.

The arrests of pickpockets run thus since 1861, the limit of returns accessible:

1861	466	1868	348
1862	300	1869	303
1865	275	1870	274
1867	345	1871	313

In ten years a reduction of 153 in the arrests of pickpockets.

In petty larceny the returns stand thus in brief:

1862	4,107	1870	4,909
1865	5,240	1871	3,912
1867	5,269		

A decrease in nine years of 195.

Arrests of girls alone under twenty:

1863	3,132	1870	1,993
1867	2,588	1871	1,820

When we consider the enormous destruction of property, the cost to the public of their prosecution and support, and the loss of productive energy which all these youthful criminals occasioned to society by their offenses and imprisonment, we can approximate the immense saving, even in a pecuniary respect, to the city, of labors which thus reduce the number of vagrants, thieves, and convicts.

There can be no question that no outlay of public money or of private charity is so productive, or pays so well, as that for educational and charitable enterprises like our own.

D.—REVIEW OF THE STATE AND CONDITION OF PENAL AND REFORMATORY INSTITUTIONS IN THE UNITED STATES.

NOTE.—An extended paper on the county jails, State prisons, houses of correction, houses of refuge, and reform schools of the United States has been prepared for publication as a part of the present report, but such an avalanche of work was precipitated upon the Public Printer, taxing the resources of his office to its utmost capacity for weeks, and even months, that it was found absolutely impossible to get the Commissioner's report out in time for the meeting of the congress of London on any other condition than that of curtailing the document by the suppression of that portion of it. This suppression had to be assented to, however reluctantly, upon the principle expressed in the homely adage that "half a loaf is better than no bread."

CHARLES L. BRACE,
Chairman.

NEW YORK, *January* 27, 1871.

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APPENDIX.

THE NATIONAL PRISON ASSOCIATION OF THE UNITED STATES OF AMERICA.*

I.—OFFICERS OF THE ASSOCIATION FOR 1872.

President.—Hon. Horatio Seymour, Utica, New York.

Vice-Presidents.—Hon. James G. Blaine, Speaker United States House of Representatives, Augusta, Maine; Hon. Daniel Haines, Hamburgh, New Jersey; Hon. Francis Lieber, LL. D., 48 East Thirty-fourth street, New York; General Amos Pilsbury, superintendent Albany Penitentiary, Albany, New York; Hon. Conrad Baker, governor of Indiana, Indianapolis, Indiana.

Treasurer.—Salem H. Wales, esq., 520 Fifth avenue, New York.

Corresponding Secretary.—E. C. Wines, D. D., LL. D.; office, 194 Broadway; residence, Irvington, New York.

Recording Secretary.—Bradford K. Peirce, D. D., chaplain House of Refuge, Randall's Island, New York.

II.—BOARD OF DIRECTORS.

Samuel Allinson, Yardville, New Jersey.
William H. Aspinwall, esq., 33 University Place, New York.
Hon. Conrad Baker, governor of Indiana, Indianapolis, Indiana.
Henry W. Bellows, D. D., 232 East Fifteenth street, New York.
Hon. James G. Blaine, Speaker United States House of Representatives, Augusta, Maine.
Rev. Charles L. Brace, secretary Children's Aid Society, 19 Fourth street, New York.
Z. R. Brockway, esq., superintendent Detroit House of Correction, Detroit, Michigan.
James Brown, esq., 38 East Thirty-seventh street, New York.
Charles F. Coffin, president board of directors, House of Refuge, Richmond, Indiana.
Hon. Theodore W. Dwight, LL. D., president Columbia College Law School, 37 Lafayette Place, New York.
G. S. Griffith, esq., Baltimore, Maryland.
Hon. Daniel Haines, Hamburgh, New Jersey.
E. W. Hatch, M. D., superintendent State Reform School, West Meriden, Connecticut.
Hon. R. B. Hayes, Cincinnati, Ohio.
Morris K. Jesup, esq., 59 Liberty street, New York.
John Taylor Johnston, esq., 119 Liberty street, New York.
Hon. Francis Lieber, LL. D., 48 East Thirty-fourth street, New York.
A. J. Ourt, M. D., corresponding secretary board of public charities, 737 Walnut street, Philadelphia, Pennsylvania.

* It was by this association that the international penitentiary congress was first formally proposed, and by it the work of preparation has been mainly conducted, through its corresponding secretary, who was also clothed with an official character by a commission from the President of the United States to represent the Government in the congress.

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B. K. Peirce, D. D., chaplain House of Refuge, Randall's Island, New York.

General Amos Pilsbury, superintendent Albany penitentiary, Albany, New York.

F. B. Sanborn, esq., editor, Springfield, Massachusetts.

Hon. Horatio Seymour, Utica, New York.

Hon. L. Stanford, Sacramento, California.

Oliver S. Strong, esq., president board of managers New York House of Refuge, 61 Bible House, New York.

Salem H. Wales, 520 Fifth avenue.

Hon. and Rev. G. William Welker, Goldsborough, North Carolina.

A. R. Wetmore, president board of managers New York Juvenile Asylum, 365 Greenwich street, New York.

Hon. R. K. White, Louisville, Kentucky.

John E. Williams, esq., president Metropolitan National Bank, 108 Broadway, New York.

E. C. Wines, D. D., LL. D., 194 Broadway, New York.

III.—Standing committees.

1. *Executive committee.*—The president, treasurer, corresponding secretary, and recording secretary, *ex officio;* H. W. Bellows, D. D., Rev. Charles L. Brace, and O. S. Strong.

2. *Committee on criminal law reform.*—H. Seymour, F. Lieber, Daniel Haines, Conrad Baker, James G. Blaine, Theodore W. Dwight, R. B. Hayes.

3. *Committee on prison discipline.*—F. B. Sanborn, Z. R. Brockway, Amos Pilsbury, A. J. Ourt, G. William Welker.

4. *Committee on juvenile delinquency.*—C. L. Brace, B. K. Peirce, O. S. Strong, E. W. Hatch, A. R. Wetmore.

5. *Committee on discharged prisoners.*—Samuel Allinson, Daniel Haines, Charles Coffin, R. K. White, G. S. Griffith.

IV.—Corresponding members.

John Stewart Mill, esq., Blackheath Park, Kent, England.

Mr. Commissioner M. D. Hill, Heath House, Stapleton, near Bristol, England.

Miss Mary Carpenter, Red Lodge Reformatory, Bristol, England.

Miss Florence Nightingale, South street, London, England.

Right Hon. Sir Walter Crofton, C. B., Hillingdon, Uxbridge, England.

Sir John Bowring, Claremont, Exeter, England.

Frederic Hill, esq., 27 Thurlow Road, Hampstead, London, England.

Edwin Hill, esq., No. 1 Saint Mark's Square, Regent's Park, London, England.

Miss Florence Hill, Heath House, Stapleton, near Bristol, England.

Miss Joanna Margaret Hill, Birmingham, England.

Alfred Aspland, esq., Dukenfield, Ashton-under-Lyne, England.

William Tallack, esq., No. 5 Bishopsgate street, Without, London, England.

Charles Ford, esq., 24 New street, Spring Gardens, London, England.

Rev. Sydney Turner, inspector of reformatories, 15 Parliament street, London, England.

W. L. Sargant, esq., Birmingham, England.

Edwin Chadwick, esq., Montlake, England.

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A. Augus Croll, esq., Putney, England.
Miss Francis Power Cobbe, 26 Hereford Square, London, England.
George W. Hastings, esq., 1 Adam street, Adelphi, London, England.
T. B. Ll. Baker, Hardwicke Court, Gloucester, England.
T. L. Murray Browne, esq., No. 4 Old Square, Lincoln's Inn, London, England.
Edwin Pears, esq., Secretary of British Social Science Association, No. 1 Adam street, Adelphi, London, England.
Captain E. F. Du Cane, surveyor general of prisons, No. 44 Parliament street, London, England.
John Lentaigne, esq., inspector of county and borough jails, Dublin, Ireland.
Patrick Joseph Murray, esq., director of convict prisons, Dublin, Ireland.
Captain J. Barlow, director of convict prisons, Dublin, Ireland.
M. Bonneville de Marsaugy, 7 rue Penthiévre, Paris, France.
M. Victor Bournat, 20 rue Jacob, Paris, France.
M. E. Robin, (pasteur,) 21 rue Piat, Belleville, Paris, France.
M. J. Jaillant, director of prisons, ministry of the interior, Paris, France.
M. Jules de Lamarque, chief of bureau, direction of prisons, Paris, France.
Dr. Prosper Despine, 12 rue du Loisor, Marseilles, France.
M. Charles Lucas, member of the Institute, Paris, France.
M. le Vicompt d'Haussonville, member of the national assembly, rue St. Dominique, Paris, France.
M. Auguste Demetz, 92 rue de la Victoire. Paris, France.
M. A. Corne, sous-prefect, St. Omer, France.
M. Berden, administrator of prisons, Brusseles, Belgium.
M. J. Stevens, inspector general of prisons, Brusseles, Belgium.
M. Auguste Visschers 106, rue Royale, Brusseles, Belgium.
Mr. Alstorphius Grovelink, inspector of prisons, the Hague, Netherlands.
Mr. W. H. Suringar, president of the Netherlands Society for the Moral Reform of Prisoners, Amsterdam, Netherlands.
Rev. Dr. Laurillard, secretary of same, Amsterdam, Netherlands.
Mr. B. J. Ploos Von Amstel, Amsterdam, Netherlands.
Dr. Guillaume, director of the Penitentiary, Neuchâtel, Switzerland.
Mr. Max Wirth, chief of the statistical bureau, Berne, Switzerland.
Signor F. Cardon, director general of prisons, Rome, Italy.
Signor M. Bettrani-Scalia, inspector general of prisons, Rome, Italy.
Baron Franz Von Holtzendorff, professor of law in the University of Berlin, Charlottenburg, near Berlin, Prussia.
Rev. Dr. Wichern, director of the Rauhe Haus, Horn, near Hamburg, Germany.
Mr. Fr. Bruün, director of prisons, Copenhagen, Denmark.

V.—LIFE DIRECTORS BY THE CONTRIBUTION OF TWO HUNDRED DOLLARS OR UPWARD, AT ONE TIME, TO THE FUNDS OF THE ASSOCIATION.

Timothy M. Allyn, Hartford, Connecticut.
James Brown, New York.
Morris K. Jesup, New York.
W. Soldatenkoff, St. Petersburg, Russia.

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VI.—Life members by the contribution of one hundred dollars or upward at one time.

William H. Aspinwall, New York.
W. Amory, Boston, Massachusetts.
H. K. Corning, New York.
Erastus Corning, Albany, New York.
D. Denny, Boston, Massachusetts.
Edward Earle, Worcester, Massachusetts.
George B. Emerson, Boston, Massachusetts.
Mrs. Mary A. Holden, Providence, Rhode Island.
Joseph Howland, Matteawan, New York.
John Taylor Johnston, New York.
Amos Pilsbury, Albany, New York.
Jonathan Sturges, New York.
N. Thayer, Boston, Massachusetts.
E. C. Wines, New York.
John David Wolfe, New York.

VII.—Contributions to the National Prison Association from May, 1871, to May, 1872.

California.

Mrs. L. Hutchison, Bishop Creek		$10

Connecticut.

Timothy M. Allyn, Hartford	$500	
James E. English, New Haven	25	
R. S. Fellowes, New Haven	10	
Rev. Thos. K. Fessenden, Farmington	10	
Miss M. W. Wells, Hartford	25	
		570

Illinois.

Geo. W. Perkins, Pontiac		10

Indiana.

Charles F. Coffin, Richmond		10

Kentucky.

P. Caldwell, Louisville		10

Maryland.

W. R. Lincoln, Baltimore		10

Massachusetts.

W. Amory, Boston	100
William J. Bowditch, Boston	10
Gridley J. F. Bryant, Boston	10
John W. Candler, Boston	50
Cash, Boston	10
D. Denny, Boston	100
Mrs. Henry F. Durant, Boston	50
Edward Earle, Worcester	100
Geo. B. Emerson, Boston	100
Charles O. Foster, Boston	25
A. Hardy, Boston	25
S. G. Howe, Boston	10
Mrs. Julia Ward Howe, Boston	10
Samuel Johnson, Boston	10
H. P. Kidder, Boston	50
O. W. Peabody, Boston	50
Avery Plumer, Boston	10

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M. S. Scudder, Boston	$20	
E. S. Tobey, Boston	50	
Nathaniel Thayer, Boston	100	
J. C. Tyler, Boston	10	
Samuel D. Warren, Boston	50	
		$950
Michigan.		
O. Goldsmith, Detroit	10	
H. V. N. Lothrop, Detroit	10	
R. McLelland, Detroit	10	
James McMillen, Detroit	10	
John S. Newberry, Detroit	10	
C. J. Walker, Detroit	10	
		60
New Hampshire.		
Rev. William Clark, Andover		10
New York.		
William H. Aspinwall, New York	200	
James Brown, New York	400	
Stewart Brown, New York	100	
H. K. Corning, New York	150	
Erastus Corning, Albany	200	
Winthrop S. Gilman, New York	100	
Joseph Howland, Matteawan	150	
James Hunter, New York	20	
Morris K. Jesup, New York	200	
John Taylor Johnston, New York	100	
Henry T. Morgan, New York	50	
Amos Pilsbury, Albany	100	
H. F. Phinney, Cooperstown	25	
Guy Richards, New York	45	
Jonathan Sturges, New York	150	
E. C. Wines, New York	200	
John David Wolfe, New York	200	
Weston & Gray, New York	100	
Salem H. Wales, New York	100	
John E. Williams, New York	50	
		2,640
Ohio.		
G. E. Howe, Lancaster	10	
Mrs. R. A. S. Janney, Columbus	10	
		20
Pennsylvania.		
Henry Cordier, Claremont, Allegheny County	50	
T. H. Nevin, Allegheny	10	
		60
Rhode Island.		
A. E. Burnside, Providence	10	
A. C. Barstow, Providence	20	
Jacob Dunnell, Pawtucket	10	
W. W. Hoppin, Providence	10	
Mrs. Mary A. Holden, Providence	100	
Robert H. Ives, Providence	60	
William J. King, Providence	40	
Mrs. Henry Lippitt, Providence	20	
Jesse Metcalf, Providence	10	
Seth Padelford, Providence	10	
Mrs. G. M. Richmond, Providence	30	
Miss Caroline Richmond, Providence	20	
A. & W. Sprague, Providence	100	
James Y. Smith & Nichol, Providence	40	
Amos D. Smith, Providence	10	
H. J. Steere, Providence	10	
James Tillinghast, Providence	20	
Royal C. Taft, Providence	20	
Rev. Augustus Woodbury, Providence	20	
		550

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Russia.	
W. Soldatenkoff, St. Petersburg	$200
Total contributions for the year	5,120

VIII.—ACT OF INCORPORATION.

The people of the State of New York, represented in senate and assembly, do enact as follows:

SECTION 1. Horatio Seymour, Theodore W. Dwight, Francis Lieber, Amos Pilsbury, James Brown, William H. Aspinwall, John Taylor Johnston, John E. Williams, Theodore Roosevelt, Morris K. Jesup, Isaac Bell, James G. Blaine, Conrad Baker, Rutherford B. Hayes, Daniel Haines, Enoch C. Wines, Oliver S. Strong, Bradford K. Peirce, Charles L. Brace, Charles F. Coffin, Howard Potter, Henry S. Terbell, Z. R. Brockway, Frank B. Sanborn, Edward W. Hatch, and their associates and successors in office, are hereby constituted a body corporate and politic, by the name of "The National Prison Association of the United States of America," whose duty it shall be to consider and recommend plans for the promotion of the objects following; that is to say—

1. The amelioration of the laws in relation to public offenses and offenders, and the modes of procedure by which such laws are enforced.

2. The improvement of the penal, correctional, and reformatory institutions throughout the country, and the government, management, and discipline thereof, including the appointment of boards of control and of other officers.

3. The care of, and providing suitable and remunerative employment for, discharged prisoners, and especially such as may or shall have given evidence of a reformation of life.

SEC. 2. The principal place of business of the said corporation shall be in the city of New York; and the management and disposition of its affairs, property, and funds shall be vested in the persons named in the first section of this act, and their associates and their successors in office, who shall remain in office for such period, and be displaced and succeeded by others to be elected at the times and in the manner prescribed by the by-laws. The number of members to constitute a quorum shall be fixed by the by-laws.

SEC. 3. The said corporation shall have power to purchase or take by gift, grant, devise, or bequest, real and personal property to an amount not exceeding three hundred thousand dollars, subject to the provisions of chapter three hundred and sixty of the laws of eighteen hundred and sixty.

SEC. 4. The said corporation shall have and possess all the general powers, and be subject to all the liabilities, contained in the third title of chapter eighteen of the first part of the Revised Statutes.

SEC. 5. This act shall take effect immediately.

STATE OF NEW YORK,
Office of the Secretary of State, ss:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom, and of the whole of said original law.

Given under my hand and seal of office at the city of Albany, this twenty-ninth day of April, in the year one thousand eight hundred and seventy-one.

DEIDRICH WILLERS,
Deputy Secretary of State.

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IX.—CONSTITUTION.

ARTICLE I. This association shall be called the National Prison Association of the United States of America, and its objects shall be—

1. The amelioration of the laws in relation to public offenses and offenders, and the modes of procedure by which such laws are enforced.

2. The improvement of the penal, correctional, and reformatory institutions throughout the country, and of the government, management, and discipline thereof, including the appointment of boards of control and of other officers.

3. The care of, and providing suitable and remunerative employment for, discharged prisoners, and especially such as may or shall have given evidence of a reformation of life.

ART. II. The officers of the association shall be a president, five vice-presidents, a corresponding secretary, a recording secretary, a treasurer, and a board of directors, not exceeding thirty in number, of which the officers above named shall be *ex officio* members.

ART. III. There shall be the following standing committees, namely: An executive committee, of which the president shall be *ex officio* chairman, the recording secretary *ex officio* secretary, and the corresponding secretary and treasurer *ex officio* members; a committee on criminal law reform; a committee on prison discipline; a committee on juvenile delinquency; and a committee on discharged prisoners.

ART. IV. The board of directors, of whom any five members shall constitute a quorum—two of said members being officers of the association—shall meet semi-annually, and in the interval of its meetings its powers shall be exercised by the executive committee, which shall fix its own times of meeting.

ART. V. Committees of correspondence shall be organized in the several States, as may be found practicable; and the formation of State associations shall be encouraged.

ART. VI. Any person contributing annually to the funds of the association not less than ten dollars shall be a member thereof; a contribution of one hundred dollars at any one time shall constitute the contributor a life member; and a contribution of two hundred dollars at any one time shall entitle the contributor to be a life director. Corresponding members may be appointed by the board of directors or by the executive committee. The power of electing officers shall be confined to the corporate members of the association.

ART. VII. The association shall hold an annual meeting at such time and place as the executive committee shall appoint, on which occasion the several standing committees, the corresponding secretary, and the treasurer shall submit annual reports. Special meetings may be called by the president in his discretion, and shall be called by him whenever he is requested to do so by any three members of the board.

ART. VIII. All officers of the association shall be elected at the annual meeting or some adjournment thereof; but vacancies occurring after the annual meeting may be filled by the board of directors, who shall also appoint all committees not chosen at the annual meeting; and all officers shall hold over till their successors are chosen.

ART. IX. The executive committee shall consist of seven members of the board of directors—the president, the recording secretary, the corresponding secretary, and the treasurer being *ex officio* members—any three of whom shall constitute a quorum for the transaction of business.

ART. X. This constitution may be amended by vote of a majority of

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the members of the association at any meeting thereof: *Provided*, That notice of the proposed amendment shall have been given at the next preceding meeting.

X.—By-laws.

I. The order of business at each stated meeting of the board shall be as follows:

1. Reading of the minutes.
2. Report of the treasurer.
3. Report of the corresponding secretary.
4. Reports from standing committees.
5. Reports from special committees.
6. Miscellaneous business.

II. The president, corresponding secretary, recording secretary, and treasurer shall perform the customary duties of their respective offices.

III. The president shall appoint the committees, unless otherwise ordered by the association.

IV. The president shall decide questions of order, subject to an appeal; and the rules of order shall be those in Cushing's Manual, so far as they may be applicable.

V. No bills shall be paid by the treasurer unless approved and signed by the chairman of the executive committee, or by some other member of said committee designated by him.

VI. No alteration shall be made in these by-laws, except on notice of the proposed amendment given at a previous meeting of the board.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

In compliance with a resolution of the Senate of February 12, a list of the military reservations in and near the city of San Francisco, California, giving the name and approximate extent in acres of each.

FEBRUARY 26, 1872.—Ordered to lie on the table and be printed.

WAR DEPARTMENT, *February* 23, 1872.

The Secretary of War has the honor to transmit to the United States Senate, in compliance with a resolution of the 12th instant, a list of the military reservations in and near the city of San Francisco, California, giving the name and approximate extent in acres of each.

WM. W. BELKNAP,
Secretary of War.

List of the military reservations in and near the city of San Francisco, California, giving the name and extent in acres of each, as near as practicable.

Name.	No. of acres.	Remarks.
Presidio and Fort Point	1,541.1	Reserved.
Lime Point	1,899.66	Purchased.
Point San José, or Black Point	55.3	Reserved.
Angel Island	692.9	Reserved.
Alcatraz Island	21.3	Reserved.
Yerba Buena Island	140.8	Reserved.
Molate or Red Rock, (rocky islet)	4.8	Reserved,(informally.)
The Brothers, (two rocky islets)	1.8	Reserved.
The Sisters, (two rocky islets)	0.425	Reserved.
Marin Islands, (two rocky islets)	11.7	Reserved.
Peninsular Island	183.3	Reserved.

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LETTER

FROM

THE SECRETARY OF WAR,

CONCERNING

The necessity for a connecting line of telegraph between important military posts in the Military Division of the South.

MARCH 1, 1872.—Referred to the Committee on Military Affairs and ordered to be printed.

WAR DEPARTMENT, *February* 28, 1872.

The Secretary of War has the honor to invite the consideration of the United States Senate and House of Representatives to the accompanying copy of a report concerning the necessity for a connecting line of telegraph between important military posts in the Military Division of the South, and particularly in the Department of the South, in connection with a communication and papers on the subject, submitted on the 6th of January.

WM. W. BELKNAP,
Secretary of War.

HEADQUARTERS DEPARTMENT OF ARIZONA,
Prescott, January 8, 1872.

SIR: I have the honor to again invite your attention to the necessity for connecting the important points in this department with division headquarters by telegraph.

By extending the line from San Diego to Fort Yuma, thence via the Gila River and Camp McDowell to this place, communication with the posts in the southern part of the Territory would be materially shortened, and information of depredations by Indians or Mexican bandits—which latter are becoming so frequent along the border as to depopulate the country soon, unless checked—would be speedily communicated, and their capture or punishment by our troops rendered almost certain.

Aside from the military advantage of connecting your headquarters and Yuma, which is the entrepôt for the department, with the headquarters and field operations, the line would undoubtedly be largely patronized by citizens, and soon pay for itself.

I urgently request that this matter receive the early attention of the proper authority.

I am, sir, very respectfully, your obedient servant,

GEORGE CROOK,
Lieut. Col. 23d Infantry, Brt. Maj. Gen. Commanding.

ASSISTANT ADJUTANT GENERAL,
Military Division of the Pacific, San Francisco, Cal.

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Indorsement.

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC,
San Francisco, January 25, 1872.

Respectfully forwarded to the Adjutant General, inviting attention to communication on this subject dated December 12, 1871, and urging prompt and favorable action.

J. M. SCHOFIELD,
Major General Commanding.

Indorsements on copy of foregoing communication.

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC,
San Francisco, January 25, 1872.

Official copy respectfully referred to Brigadier General M. C. Meigs, Quartermaster General United States Army, with request that he will give this matter his special consideration during his visit to Arizona.

J. M. SCHOFIELD,
Major General Commanding,
Per J. C. KELTON,
Lieutenant Colonel, Assistant Adjutant General.

SAN FRANCISCO, *January* 25, 1872.

Respectfully returned to Major General Schofield. I will endeavor to gather some knowledge on this subject while in Arizona. But I am already convinced that the construction of a telegraph line to connect the principal military posts with the general net-work of telegraphs is a measure of defense and economy, and well worth its probable cost. I do not hesitate to advise such construction if the War Department has the funds at its disposal, and an application to Congress for funds for this purpose, if no appropriation now on hand is available for such construction.

M. C. MEIGS,
Quartermaster General, Brevet Major General U. S. A.

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC,
San Francisco, January 26, 1872.

Respectfully forwarded to the Adjutant General, inviting attention to the indorsement of the Quartermaster General United States Army.

J. M. SCHOFIELD,
Major General Commanding.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A copy of the report of Major W. E. Merrill, Corps of Engineers, upon the survey of the harbor at Evansville, Indiana.

MARCH 1, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *February* 28, 1872.

The Secretary of War has the honor to transmit herewith, to the United States Senate, copy of the report of Major W. E. Merrill, Corps of Engineers, upon the survey of the harbor of Evansville, Indiana, in compliance with a resolution of the 23d instant.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., February 26, 1872.

SIR: In compliance with the following resolution of the Senate of the United States, of the 23d instant, viz: "That the Secretary of War be directed to furnish the report of Major W. E. Merrill, of the Corps of Engineers, upon the survey of the harbor at Evansville, Indiana, if consistent with the interest of the public service," I beg leave to transmit herewith a copy of the report of Major Merrill upon the survey referred to, of February 13, 1872, with whose views I concur.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

OFFICE OF OHIO RIVER IMPROVEMENT,
Cincinnati, Ohio, February 13, 1872.

GENERAL: I have the honor herewith to submit a report on the improvement of the harbor of Evansville, Indiana, made by my assistant, Mr. William Weston, civil engineer. At the time your instructions of December 5 were received, I was absent in the South, on duty connected with the construction of water-gauges on the Mississippi and its tributaries, and therefore assigned the work to him.

I have carefully gone over the whole subject with him, and the report fully meets

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my views in the matter. I should prefer being permitted to build a nine-foot dike on a hurdle foundation, as this method of construction seems the best for obviating one of our greatest difficulties—the settling of dikes after exposure to high water for one or two seasons. Some device of this kind is a necessity for dikes on the Lower Ohio, where the bottom is unstable, and the plan indicated appears now to offer the best chance of success. The estimate for this, as given, is $89,850, and therefore I think that it would be best to have an appropriation of $90,000.

The intention of the work recommended is to throw the channel across the low neck which connects the bar with the shore-bar at the mouth of Big Bayou. It is quite possible that some dredging may be necessary to assist the river in taking this course. I would make no estimate for this, however, as it can be done more cheaply and satisfactorily by the Government dredge-boat than by private contract, and no special appropriation would be required.

Respectfully, your obedient servant,

WM. E. MERRILL,
Major of Engineers.

General A. A. HUMPHREYS,
Chief of Engineers, Washington, D. C.

OFFICE OF THE OHIO RIVER IMPROVEMENT,
No. 4, Public Landing, Cincinnati, Ohio, February 13, 1872.

COLONEL: I have the honor to submit the following report on the survey of the harbor of Evansville, Indiana, made December 9–19th, 1871. The accompanying map, drawn to a scale of $\frac{1}{2400}$, or one inch to two hundred feet, shows the present condition of the river at this place, from the mouth of Pigeon Creek to a point two miles above the city wharf, including the extent and height of the present harbor bar, and the approaches to the public landing. All hydrographic work has been reduced to the low water of the past season, which corresponds very closely to extreme low water. The soundings given were all located by triangulation, and extend up to where the bed of the river continues at a very uniform section for several miles. Below Pigeon Creek, the deep water hugs the Indiana shore around the bend, far beyond the city limits.

In addition to the general survey, observations were taken to show the direction and velocity of the current in the main channel of the river, approaching the harbor bar, and a line of levels run to determine the surface slope.

The results of the survey, as shown by the map, prove that the bar encroaching upon Evansville harbor is a continuation of the shore-bar above, whose origin is to be referred to the fact that the width of the river-bed between banks is largely in excess of that required for low stages of water. The misfortune of the city landing seems to be that it is too far up stream, and that the main current and channel of the river strikes across to the Indiana shore, at a point in the bend below the place set apart by the city to receive it. Behind the lower point of the bar, there is at present an inlet or pocket, of sufficient depth and width to allow boats to come up to the landing at low water, but the bar is closing in upon the shore above, and the probability is that it will soon be joined to the shore throughout its whole extent, and will thus shut off all access of boats to the city wharf at ordinary stages of the river. This is the apprehended danger to the harbor, while the map shows in detail its present condition.

The results of the investigations made to ascertain "what was the condition of the channel-way of the Ohio, at the time when the approaches to Evansville were most favorable, and the landing most easily effected," were not wholly satisfactory, from the lack of any accurate records, maps, sketches, or historical matter whatsoever bearing upon the subject. The only information to be obtained on the point was from steamboat and river men, who had been familiar with this portion of the river since the early days of the city. My principal informant was Captain James W. Stinson, who has had a practical knowledge of the harbor for upward of forty years, and whose testimony is quite full and trustworthy, and is corroborated by the statement of others. He says that when the harbor was in its best condition, the dry shore-bar of Green River Island terminated at the mouth of the Big Bayou, but that below this, and separated from it by shoal water, over which boats could not pass at the lowest stages of the river, there was a bar, similar to the present harbor bar, but smaller, with its lower end opposite the foot of Locust street. This is fifteen hundred feet above the lower end of the bar in its present condition. At low water boats could then approach the present landing directly from any point below Locust street, but could not land above without rounding the foot of the bar and passing up behind it. This was thirty years ago or more.

Subsequently this lower bar increased in extent, but was very changeable from year to year. After unusually high water it would come out much larger than before, and then, following successive seasons of comparatively low water, would again be reduced

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to its ordinary size. After the flood of 1867, the bar approached nearly to its present size, but it was subsequently greatly reduced. For the past few years, its law of growth has seemed to undergo a change, and, notwithstanding the existence of conditions of the river once favorable for its reduction, it has persisted in growing, and is now more formidable than ever before. The low neck connecting it with the shore-bar has filled up, and from this point down it is gradually attaching itself to the main shore.

The cause of this growth is not easily determined. It is not yet perfectly certain that it is more than temporary, to be again reduced or counteracted under certain unknown conditions of the river. The experience of the past two years, however, makes this supposition improbable.

The wreck of the steamboat Missouri, which sunk a mile and a half above the city in 1867, may have led to an increase of the bar, though probably its influence was little, as it is out of the main channel, and, lying up and down the river, forms but a small obstruction.

Very little harm, I think, resulted from the wrecks sunk at the foot of the bar in November, 1870. They were very near its lower point, and perhaps caused some increase in the deposit of sand immediately below them, but nothing more. They were entirely removed during the past summer.

The bad state of the harbor is frequently attributed to the increased obstruction of the slough or cut-off behind Green River Island. Steamboats have passed through this slough at high water, but no one knows that any water has ever passed through it at low or ordinary stages of the river, and I think its influence, in its best condition, was small, and has been greatly overestimated.

The origin of the change is to be looked for, I think, in a gradual and probably permanent change in the channel of the river, causing it to strike the Indiana shore at a lower point in the bend than formerly.

When the approach to the city wharf was most favorable, the high bank of the Kentucky point opposite extended out into the river some two hundred feet further than at present, with a tendency to turn the channel, which comes down this shore, to the bend on the Indiana side, higher up than its present position. It will be seen by the map that the width of the river between banks is here from two to four hundred feet in excess of what it is above, so that the conditions are favorable for an increase in the extent of the former bar. This result has, no doubt, been aggravated by the action or inaction of the city in allowing material for grading their streets and wharf to be taken from the gravel point on the Kentucky side, directly opposite the troublesome bar. The reduction of this salient point, as far as it has been allowed, has had the same effect on the low-water channel that the corresponding loss in the high bank has had in diverting from the city wharf the force of the high-water channel.

Of the means of improvement that have been suggested, but a few deserve notice. The city authorities last summer made a small and unsuccessful effort to cut a channel through the low point between the shore and river portions of the bar, in hopes to secure a draught of water sufficient to cut out a through channel to their landing from above. The difference of level between the surface of water in the main channel and in the bay at the time of the survey was only 0.4, while the bar is here very wide and constantly increasing in height, so that, under the most favorable circumstances, nothing more than a temporary benefit is probable from any effort of improvement in this direction.

Whether this re-opening of the "cut-off" would help the matter is very doubtful, and its probabilities need not be discussed, as the project is utterly impracticable.

I consider the only efficient means of improvement to be a dike or wing-dam thrown out from the Kentucky shore, above the city, to turn the current of the river against the bar and scour it out. Its material is light sand, which could not stand against the current, if once turned against it. Although such a dike, properly constructed, would no doubt accomplish this object, the question of its exact position, direction, and extent to secure efficiency and economy of construction, is not easily determined. The surface-slope of the river at the time of the survey was 0.37 feet per mile, with a maximum current velocity of 2¼ miles per hour. This is not enough to excite apprehensions of any troublesome eddies or cross-currents.

The dike or dam proposed contemplates turning the channel across the low neck between the harbor and shore portions of the bar. It starts out from the Kentucky shore, about a mile above the city wharf, and runs across and down the river till it strikes the present low-water shore-line of the bar, making a total length of 2,700 feet. To build this, dike to a height of 9 feet above low-water level, with a top-width of 12 feet, and up-stream slope of one on one and a down-stream slope of one on three, would require 46,200 cubic yards of riprap stone.

Estimating the cost of quarrying and placing in dam at $1 75 per cubic yard, the total cost would be $80,850. After this dam has been exposed for a year or two to high water and ice, it will probably require an additional sum for repairs, but this need not

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be considered at present. When the channel has once been opened, a less height of dam may answer the purpose, and this expense for repairs may thus be avoided. As the lower part of the dam will have a sand foundation, some repairing can scarcely be avoided. At an estimated cost of $6 per linear foot, hurdle-work one hundred feet wide could be laid for a foundation where the dam was built on a sandy bottom. For the first 1,200 feet the bottom is gravel; using hurdle-work, for the remaining 1,500 feet on sand, the cost would be increased $9,000, or to $89,850. Experience is wanting to determine the efficiency of hurdle-work to prevent scour in foundations on sand in the Ohio. Its advantages, however, would undoubtedly be sufficient to compensate for the extra cost.

Another method of construction would be to put brush in the center of the dam, up to low-water mark level, for a width of 30 feet, securing it by piles set 20 feet from each other in two rows. If this method be followed the estimate would be for

36,200 cubic yards of riprap, at $1 75	$63,350
2,109 cords of brush, at $3 00	6,327
240 piles, at $3 00	720
Making the total cost	70,397

To build the dam to a height of 6 feet above low water, but otherwise of the same dimensions as above, would require, if built of stone, 30,000 cubic yards, at a cost of $52,500. If with a center core of brush 20 feet wide, and as high as the low-water surface, the cost would be reduced to $45,774. It is, of course, impossible to foretell what the effects of the dike will be. Like all river work of this character, it is only by awaiting actual results that the efficiency of any plan can be demonstrated. With the dike built as proposed, it may afterward be found necessary to extend it, in order to accomplish all that is desired.

The position of the dam was laid down with the idea that, if extension was found necessary, the work now proposed would be wholly available and adapted to subsequent additions. Under the circumstances, I think that the extent of the dike, as indicated on the map, reaching, as it does, quite across the low-water channel, is all that should now be recommended. Nothing less than this is likely to give the desired relief. If anything more is found necessary, it can best be determined after the results of this work become known.

The estimates for the several plans, suggested above, stand as follows:

For a dam, 9 feet above low water, of stone, with hurdle foundation	$89,850
Of stone, without hurdle foundation	80,850
Of stone and brush	70,397
For a dam, 6 feet above low water, of stone, with hurdle foundation	61,500
Of stone, without hurdle foundation	52,500
Of stone and brush	45,774

A more obvious though indirect method of improvement would be to move the city landing down stream 2,000 feet. This would take it below the point of the bar, and out of its present trouble. The water here is deep, the approaches good, and the bar not likely to get down stream far enough to again interfere. The objections to this are the cost of constructing a new wharf, its removal from proximity to the business portion of the city, and the obstruction of a railroad already located at this landing. The present city wharf cost $113,000. A similar wharf below the bar is estimated to cost from $200,000 to $250,000.

The following statistics of the trade, &c., of Evansville, are taken from a report lately prepared by Mr. V. Sorenson on the commerce of the city. His report is quite complete in detail, but too long to be reproduced here. I give only a summary of its most important points:

The total amount of internal revenue tax collected from all sources in the first district of Indiana, for the year 1871, was	$914,037 56
For the past three years	$2,190,064 81
Value of imports at the port of Evansville for the year 1871	$169,588 30
Duties collected on above	$69,771 87
The number of steamboats inspected at the port of Evansville, for the year ending June 30, 1871, was 36; amount of fees collected	$1,002 25
Number of steamboat arrivals for 1871	2,568
Passed without landing	154
Tonnage of port, 9,936.44 tons; number of vessels	68
Total sales of merchandise for 1871	$22,732,365 80
Total value of manufactures for 1871	$5,469,762 61

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The following are some of the most important articles of export for the year, and amounts of each:

Corn, bushels	1,020,580
Cotton, bales	37,243
Dried fruit, pounds	269,100
Flour, barrels	237,099
Goober peanuts, bushels	47,116
Hay, bales	37,320
Oats, bushels	208,802
Pork, barrels	38,064
Tobacco, hogsheads	32,197
Wheat, bushels	1,119,187
Whisky, barrels	25,397

Very respectfully, your obedient servant,

WM. WESTON,
Assistant.

Colonel WM. E. MERRILL, *U. S. Engineers, Cincinnati.*

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In obedience to law, an engineer report of an examination or survey of the harbor of Norfolk, Virginia, and of the Elizabeth River.

MARCH 4, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
March 1, 1872.

The Secretary of War has the honor to transmit to the United States Senate and House of Representatives, in further compliance with the requirements of section 3 of the act approved March 3, 1871, an engineer report of an examination or survey of the harbor of Norfolk, Virginia, and of the Elizabeth River.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., February 29, 1872.

SIR: I herewith transmit a report from Major W. P. Craighill, Corps of Engineers, of a survey or examination of Elizabeth River, and of the harbor of Norfolk, Virginia, made in compliance with the act of March 3, 1871.

Elizabeth River, through its southern branch, is connected with the waters of Albemarle Sound by the Dismal Swamp Canal, in which the United States have a pecuniary interest as the owners of eight hundred shares of its stock, and the Albemarle and Chesapeake Canal, eight miles farther up the stream. These two canals are the principal outlets of the commerce of Northern and Eastern North Carolina. Major Craighill estimates that, to obtain a depth of seven feet at low water as far up as the lock of the Albemarle and Chesapeake Canal, would require an expenditure of about $25,000. He also reports the sum of $30,000 could be advantageously expended in the next fiscal year in improving the approaches from the sea to the harbor of Norfolk.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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UNITED STATES ENGINEER OFFICE,
No. 399 DRUID HILL AVENUE,
Baltimore, Md., January 31, 1872.

GENERAL: A survey or examination of Elizabeth River and the harbor of Norfolk, Virginia, was ordered in the appropriation bill for the improvement and survey of rivers and harbors, approved March 3, 1871.

The field-work was taken in hand as soon as other requirements permitted, and was executed in the months of September and October, 1871, under the immediate supervision of Captain C. B. Phillips, Corps of Engineers, zealously and intelligently assisted by Mr. J. E. Weyss and Mr. Gilbert Thompson.

Other duties, which could not be postponed, delayed the completion of the office-work until this time. The reports of Captain Phillips, dated January 30, 1872, are submitted herewith, with documents and maps, as stated therein.

Captain Phillips suggests a plan of improvement for Elizabeth River, which would give a depth at low water of 7 feet, as high up as the lock of the Albemarle and Chesapeake Canal. The estimated cost is $18,000.

As the tide rises nearly three feet, this additional depth could be then had at high water each day.

If Congress should decide to make an appropriation for the Elizabeth River, the plan of improvement indicated by Captain Phillips would be judicious. I think, however, the work would be found somewhat more extensive than his estimates contemplate, and would cost not less than $25,000. If the improvement is to be undertaken, it would be a decided economy to have the whole sum appropriated at one time.

The business of the canals of which the Elizabeth River is the outlet, especially the Albemarle and Chesapeake Canal, has increased notably in the past year, as shown by extracts given below from the last annual report of the president of that company, Mr. Marshall Parks.

"The Elizabeth River is navigable for vessels from Norfolk to the locks of the canal, for vessels drawing eight feet at high tide. The rise of tide averaging three feet, it is therefore quite impossible for vessels drawing more than five feet to go up to the locks at low water; hence a delay of a few hours often occurs in reaching the canal, interfering with the regular departure of steamers from Norfolk. To make this channel sufficient at low water, will require an improvement of the river, and it is hoped the recommendation made by the United States engineers, who are now making an instrumental survey of the river, will induce Congress to make the necessary appropriations for its improvement.

* * * * * * *

"The lock has worked well, and, from its peculiar construction, so well adapted to the trade, rafts half a mile in length pass through it without being disconnected. The time and expense saved to lumbermen by this arrangement is appreciated by them. The gates, which have been in use ever since the construction of the canal, have had slight repairs during the past year, but are now in a questionable condition. Arrangements have been made for building two pairs, and if, on taking the others out, it is found that by repairing that portion above water, and the part more exposed to decay, they can be repaired, they may be restored without very great additional expense. It is proposed, at the first favorable opportunity, to build gates of iron, as being more durable. As no iron lock-gates are used on the canals of this country, we shall, if we introduce them, be the pioneer in this, as we have been in so many improvements.

"This canal is the only one in this country on which steam is used exclusively. The legislature of the State of New York, at its last session, offered a reward of $100,000 to any party that would introduce steam as a motive-power on the Erie Canal, in a manner that would prove as economical as horse-power, and attain a higher rate of speed. Such a large reward has stimulated the inventive genius of our people, and hundreds of plans have been suggested, not one of which, to this time, has accomplished greater results than are now attained on this canal.

"When the Albemarle and Chesapeake Canal was projected as a steam canal, *with no tow-path*, its projectors were looked upon as visionaries. The result of their labors has proved the soundness of their judgement. More than 35,000 vessels have passed through their canal propelled or towed by steam, no animal power having been used.

"The inland navigation, extending from the sounds of North Carolina to Baltimore, Philadelphia, and New York, continues to attract the attention of shippers. Efforts are being made to induce capital to embark in the establishment of a steam tow-boat line, with suitable barges, to run from all portions of Eastern North Carolina and Virginia to Norfolk; thence by inland route to the great Atlantic cities. It is believed the expense of transportation can be reduced below that of sail vessels. The great increase of the traffic in lumber, railroad ties, shingles, staves, corn, naval stores, telegraph-poles, and heavy ores, makes the establishment of such a line a necessity.

"During the past year many enterprising lumbermen have purchased largely of timbered lands in Eastern North Carolina, bordering on the creeks and rivers, and have

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gotten out a vast quantity of mill-timber, which has been rafted to the North. This business is destined to create a revolution in the lumber trade. The towing through the sounds and up the Chesapeake Bay has been done with economy and safety; in fact, the loss has been far less than on the Susquehanna River.

"The business of the canal has steadily increased, not so rapidly as we could wish, but still there has been a steady increase, notwithstanding there has been no addition to the population of the country.

"Immigration has not set in. The Northwest still continues to attract foreigners. Until some concerted movement is made to induce immigration to the South, its superior advantages in climate, soil, and markets will not be appreciated. Eastern North Carolina presents inducements to settlers which need only be known to prove attractive. The country adjacent to this canal embraces a territory as large as all the New England States together, excepting Maine, and has a navigation exceeding 1,800 miles in extent, offering easy and rapid communication to the principal markets of the country. If these *facts* were known to the emigrant, the population of this section would be augmented to double its present number before another decade.

"The increase in cotton during the past year has been 9,562 bales; fish, 5,924 barrels; peas and beans, 3,167 bushels; potatoes, 7,215 bushels; wheat, 987 bushels; timber and sawed lumber, 674,593 feet; shingles, 15,529,400; staves, 134,000; fresh shad, 200,000; watermelons, 23,600.

"The following articles decreased: Naval stores, 5,256 barrels; corn, 64,700 bushels; railroad-ties, 11,824; wood, 5,252 cords.

"There has been a considerable increase in articles not heretofore mentioned, viz: Juniper, poplar, and beach logs—rafts, 49; 1,967 cords; peaches, 8,335 boxes; passengers, 3,813.

"The number of vessels going north was 2,471; south, 2,429; total, 4,900, composed as follows: Steamboats, 1,656; schooners, 944; sloops, 555; barges, 183; lighters, 1,030; boats, 483; total, 4,900.

"The tolls north and south last year were $47,662 56; this fiscal year, $55,778 72—a gain of $8,116 16. The towing last year was $10,567 61; this year, $8,806 77—making a loss of $2,760 79.

* * * * * * * *

"Norfolk County has of late years been a garden for New York and other large cities. The rapid and frequent steam communication centering at Norfolk City has great facilities for the transportation of early fruits and vegetables to the northern markets. Such has been the rapid growth of this business that, to accommodate it, steamships are daily departing for Baltimore, Philadelphia, New York, and Boston.

"Lands contiguous to the city of Norfolk, which, before the development of this business, did not command over $10 to $20 per acre, are now selling from $300 to $1,000 per acre.

"The lands along the line of the canal in Virginia, and those upon North Landing River and Currituck Sound, North Carolina, convenient to navigation, may become equally as valuable, because they can produce vegetation from five to ten days earlier than Norfolk, and they possess facilities for reaching the market by water, which is less expensive and better than land transportation."

The report of Captain Phillips points out several changes in the condition of the harbor of Norfolk since the last map by the United States Coast Survey. He gives satisfactory explanations of the probable causes of those changes, which deserve attentive consideration as well upon the part of the authorities of the United States as of the State of Virginia, and the cities of Norfolk and Portsmouth, in order that the causes of injury of the same kind may be guarded against in the future. The channel has shoaled to some extent opposite the mouth of the Western Branch.

The sum of $30,000 could be advantageously expended in the next fiscal year in improving the approaches from the sea to the harbor of Norfolk, should Congress deem it expedient to make such appropriation.

Estimates.

Elizabeth River	$25,000
Norfolk Harbor	30,000

Very respectfully, your obedient servant,

WM. P. CRAIGHILL,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. Army, Washington, D. C.

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UNITED STATES ENGINEER OFFICE, 2425 K STREET,
Washington, D. C., January 30, 1872.

MAJOR: I have the honor to state that, in accordance with instructions received from you, I have completed a survey of the Elizabeth River, Virginia, and I submit herewith my report, accompanied by a tracing from the original chart of the survey.

I was assisted in the survey by Messrs. J. E. Weyss and G. Thompson, the party consisting otherwise of seven laborers and boatmen.

The Elizabeth River unites with the James and Nansemond Rivers in forming that magnificent estuary of Chesapeake Bay known as "Hampton Roads."

The three branches of the Elizabeth River are known respectively as the Southern, Eastern, and Western Branches, of which the first is the most important.

At the confluence of the Southern and Eastern Branches (about seven miles from the mouth of the river) are located the important cities of Norfolk and Portsmouth, the former on the right, and the latter on the left bank.

A survey of Norfolk Harbor having being ordered and completed, and a map and report upon the same having been prepared, I shall in this report confine myself to the Southern and most important branch of the Elizabeth River above the United States navy-yard.

The sheet accompanying the report on Norfolk Harbor shows that portion of the river below the confluence of the three branches, the Eastern and Western themselves; and also the position of the United States navy-yard referred to above. The various interests connected with these localities are touched on in the report upon Norfolk Harbor. I have adopted this plan, in order to avoid a set of disjointed sheets.

Referring, then, to the Southern Branch alone, this survey was undertaken in conjunction with the survey of Norfolk Harbor, the point of operations for each day being decided by the state of the weather.

The survey was accomplished between the 27th of September and the 31st of October last; eighteen days in all being occupied on the survey.

The low and marshy condition of the shores compelled a resort to triangulation at various points, the chain being called into requisiton whenever its use was possible.

Total length of shore absolutely run by chain, 7¼ miles; number of occupied stations, 166; number of unoccupied stations, 157; number of angles read, 1,729; number of soundings, 8,708.

Tide-gauges were kept at four different points on the river, and mean low-water mark established as accurately as possible.

All soundings on the accompanying chart are reduced to this reference.

It may be properly remarked in this connection that the result of our observations for mean low water varied but very slightly from that established by the Coast Survey in 1866.

A remarkable fact connected with the tide in the Elizabeth River is, that the ordinary rise at the upper portion of the stream (at Albemarle and Chesapeake canal lock) is nearly as much as at the mouth, being about three feet at latter and 2.7 feet at the former point. The rise of the tide at the upper portion of the stream varies considerably, however, with the prevailing winds.

The Southern Branch derives its chief importance from the fact of its being the principal outlet for the commerce of Northern and Eastern North Carolina.

Two canals connect this river with the waters of Albemarle Sound, North Carolina.

The Dismal Swamp Canal, locking into the Elizabeth at a point about six miles above Norfolk, connects with the head-waters of Pasquotank River, North Carolina, which empties into Albemarle Sound.

The Albemarle and Chesapeake Canal locks into the Elizabeth at a point about eight miles farther up the stream, and connects with North Landing River, an affluent of Currituck Sound, North Carolina.

These canals open up an immense line of inland navigation, and about twenty counties in North Carolina find this their most convenient outlet.

Over the line of the Dismal Swamp Canal there was passed, during the year ending September 30 last, about 8,000 tons of inward or northern freight, and about 10,000 tons of outward or southern freight. Total receipts of the canal from tolls on the above, between $12,000 and $13,000. For details concerning this amount of freight, I refer to the annual report of the president and directors of this company for the year ending September 30 last. A copy of that report accompanies this. I also append a copy of a memorial of the Dismal Swamp Canal Company to the Senate and House of of Representatives of the United States, dated December 20, 1871.

The General Government is largely interested in the stock of this canal.

A still larger amount of trade is carried on over the line of the Albemarle and Chesapeake Canal. During the year ending September 30, 1871, 4,900 trips were made through this canal by steamers, sloops, and craft of all kinds.

The total amount of tolls accruing to the company from this traffic amounted to about $56,000, a gain of over $8,000 above that of the previous year.

For the details of this trade I refer to the report of the president and directors of

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the canal company for the year ending September 30, 1870 and 1871, respectively. These printed reports are herewith appended.

Below the lock of the Dismal Swamp Canal no difficulty is experienced in the navigation of the Elizabeth River. A deep and unobstructed channel exists up to this point, and, in fact, to a point about two miles further up the river.

The above remark should be qualified by stating that the Norfolk and Petersburgh Railroad bridge, which crosses the river about three-fourths of a mile above the Dismal Swamp Lock, causes considerable annoyance to shipping, much of which is taken up and down the river in long tows. As many as five schooners sometimes constitute a single tow.

The draw of the bridge referred to is badly located. It is nearly over to the right bank of the river, away from the deepest water, and out of the course which shipping would take were it not for the bridge.

This evil, however, it appears, must continue to exist, as litigation has, I understand, failed to correct the matter.

Near Deep Creek, about five miles below the lock of the Albemarle and Chesapeake Canal, we first encounter water so shoal as to incommode the class of shipping which comes through the canal. From this point up, several shoals are encountered, and also a few turns in the course of the channel, so abrupt as to seriously interfere with the tows.

In the present state of the river, but 5 feet of water can be depended upon at all stages of the tide up to the upper lock.

The increasing trade would seem to call for at least seven feet at mean low water.

With this depth of water the capacity of the shipping might be increased, and the delay which is now experienced in waiting for high water be avoided.

A considerable amount has been expended from time to time by this company, in deepening the channel at particularly bad points; and one point has been cut off, where the turn in the channel was particularly abrupt. This latter point will be perceived by a glance at the map. This cut has worked well; the water in it has maintained its original depth, and the old channel is filling up.

In case of any contemplated improvement of this river, I would recommend two additional cut-offs.

These proposed cut-offs are marked "A" and "B" on the chart accompanying.

In my estimates I have calculated for a channel sixty feet in width at bottom, and seven feet in depth at mean low water.

On the chart I have indicated in blue lines the course which I would recommend for such a channel over the shoals and also across the two points.

The material to be dredged consists almost solely of sand, especially at the cut-offs. In the bed of the river a small proportion of mud is found.

Aplenty of room for depositing the material can be found at the old bends of the river, which would become neglected. Probably half of the removed material at the cut-offs could be deposited directly upon the banks.

The following estimates are herewith submitted as the probable cost of carrying out the improvements suggested above:

Excavating and removing amount of material as follows:

	Cubic yards.
At proposed cut-off "A"	10,704
At proposed cut-off "B"	16,760
Aggregate amount at shoals	13,356
Total	40,820

40,820 cubic yards of material, at 40 cents	$16,328 00
Add for contingencies, superintendence, &c., 10 per cent	1,632 80
Total	17,960 80

In conclusion, I beg to express my thanks to Messrs. Weyss and Thompson for the energy and ability which they displayed while engaged in the prosecution of this survey.

I am, major, very respectfully, your obedient servant,

CHAS. B. PHILLIPS,
Captain of Engineers, United States Army.

Major W. P. CRAIGHILL,
Corps of Engineers, United States Army, Baltimore, Maryland.

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UNITED STATES ENGINEER OFFICE, 2425 K STREET,
Washington, D. C., January 30, 1872.

MAJOR: I have the honor to state that, in accordance with instructions received from you, I have completed a survey of Norfolk Harbor, Virginia, and I submit herewith my report, accompanied by a tracing from the original chart of the survey.

As stated in my report upon the survey of the Southern Branch of the Elizabeth River, the chart accompanying this report exhibits the lower portion of the river, (below Norfolk Harbor proper,) and so much of the Southern Branch as to include the United States navy-yard above Portsmouth.

For purposes of comparison, I have put upon this sheet (in a different color) the soundings as given by the most recent coast surveys. Our own soundings are in blue; those of the Coast Survey in black.

All these Coast Survey soundings were taken as far back as 1854, excepting opposite the navy-yard. The latter were taken in 1866. Only the most characteristic soundings have been put on this sheet, in order to avoid confusion; and it is trusted that the plan adopted will prove of service in studying the changes which have taken place in Norfolk Harbor during the last seventeen years.

I was assisted on the survey by Messrs. J. E. Weyss and G. Thompson; the party consisting otherwise of seven laborers and boatmen.

The survey was undertaken in conjunction with that of the Southern Branch; the point of operations for the day being decided by the weather, the calmer and more favorable days being taken for soundings in the harbor and at the lower part of the river.

The survey was accomplished between the 27th of September and the 31st of October last, twelve days in all being occupied on the survey.

From the navy-yard to the lower part of the city, the shores and wharves were put in by careful triangulation. Below the city a considerable portion of the shore-line was run in by the chain. A tide-gauge was established at the light-house opposite Norfolk, and carefully observed. A few observations for tide were also made at Craney Island. Nearly at the close of our observations, we learned from the Coast Survey their bench-mark for mean low water at Norfolk Harbor. On referring to it, we found that the low water established from our observations was almost identical with that of the Coast Survey.

Total length of shore-line run, 5½ miles; number of occupied stations, 68; number of unoccupied stations, 59; number of angles read, 809; number of soundings, 5,577.

The city of Norfolk, Virginia, is located on the right bank of the Elizabeth River, at the confluence of the two branches known as the Southern and Eastern. The advantages which the city enjoys as a seaport are almost too well known to need more than a passing notice here. Her central position on the Atlantic seaboard; her mild climate, and consequent freedom from obstructions to navigation from ice; and her facilities for communication with a fertile and productive interior, give her natural advantages almost unsurpassed by any other city.

The harbor proper, (or that portion of the river opposite the city,) although somewhat contracted, has, nevertheless, a good depth of water; while below, the city has opportunities for an almost indefinite expansion of her water-front.

The city of Portsmouth, Virginia, is located opposite to, and a little above Norfolk. More properly speaking, it is situated on the left bank of the Southern Branch of the Elizabeth. Her interests are, to a great extent, identical with those of Norfolk, and she possesses, in a less degree, the same natural advantages.

Immediately above the city of Portsmouth, and on the same side of the Southern Branch, is the United States navy-yard, known as the Gosport yard. This navy-yard has not yet regained the importance which it had before the late war; but its fine natural advantages will, doubtless, at some time, make it again an important naval station; and the General Government must necessarily always be particularly interested in the preservation of the channel below.

The population of Norfolk, according to the census of 1870, was 19,229, an increase of 4,609 during the previous ten years.

The population of Portsmouth in 1870 was 10,492, an increase of 1,004 during the previous ten years.

The main lines of communication between Norfolk and the back country are the Southern Branch of the Elizabeth River, the Norfolk and Petersburgh, and the Seaboard and Roanoke Railroads.

The Southern Branch is connected with the waters of Albemarle Sound, North Carolina, by means of two canals—the Dismal Swamp and the Albemarle and Chesapeake. These two canals make tributary to Norfolk the produce and trade of some twenty counties in Northern and Eastern North Carolina; and have been referred to more particularly in my report to you of this date, concerning the survey of the Southern Branch.

The Norfolk and Petersburgh Railroad was completed in 1858. It suffered severely during the late war, but has since recuperated to a great extent, and is now, by means

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of its connections, an important outlet for the produce of a great tract of country, particularly of the tobacco region in the vicinity of Lynchburgh.

The Seaboard and Roanoke Railroad has its tide-water terminus at Portsmouth. This road is a link in the chain of passenger communication from Baltimore to the south, and also opens up a considerable trade between Norfolk and the interior of North Carolina.

Norfolk is the terminus of a line of ocean steamers to each of the following ports, viz: New York, Boston, and Philadelphia. The Bay steamers connect by a daily line with Baltimore, Md., and there is also a tri-weekly communication by steamer with Washington, D. C. Various lines of river steamers also connect Norfolk with Richmond, Yorktown, Cherrystone, and Hampton, Va., and various points in North Carolina.

An idea of the amount of the foreign trade of Norfolk will be gained by a glance at the statistics given below. I am indebted to Luther Lee, jr., esq., the courteous collector of customs at the port of Norfolk, for this information.

List of tonnage, crew, and number of vessels entered and cleared (coastwise) at the port of Norfolk, from January 1, 1871, to December 31, 1871.

ENTERED.

Tonnage	1,555,215
No. of crew	32,539
No. of vessels	1,455

CLEARED.

Tonnage	887,585
No. of crew	26,035
No. of vessels	1,003

List of tonnage, crew, and number of vessels (foreign) entered and cleared, from January 1 to December 31, 1871.

ENTERED.

Tonnage	19,310
No. of crew	861
No. of vessels	18

CLEARED.

Tonnage	12,092
No. of crew	387
No. of vessels	24

List of tonnage, crew, and number of American vessels entered and cleared, (foreign,) from January 1 to December 31, 1871.

ENTERED.

Tonnage	2,714
No. of crew	50
No. of vessels	4

CLEARED.

Tonnage	7,565
No. of vessels	32
No. of crew	340

Amount of duties collected at the port of Norfolk, Va., from January 1 to December 31, 1871.

Duties	$143,971 82
Hospital tax	3,244 80
Tonnage tax	4,572 60

On consulting the accompanying chart, for the purpose of comparing our soundings with those of the Coast Survey, it will be perceived that a number of changes have taken place in the harbor during the past seventeen years.

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I will briefly consider the most important ones. One of the most striking changes is at the entrance of the harbor proper, opposite the light-house. The water at this point has, it will be seen, gradually deepened toward the left bank of the river, while the water in the vicinity of the naval anchorage (opposite the light-house) has become correspondingly shoaled.

These changes are undoubtedly due wholly or in part to three distinct causes, viz: 1st. The sinking of hulks on the Norfolk side of the channel during the early part of the war; 2d. The prolonged stay of deep-draught naval vessels at the anchorage-ground referred to; and, 3d. The running out of wharves from the opposite or right shore. The hulks which were sunk here have been removed since the war. The anchorage is still used by naval vessels while discharging their powder, before proceeding to the navy-yard above.

Concerning the running out of wharves opposite this point, a precedent justifying the continued encroachment of the wharves upon the channel from the Norfolk side seems to have been established in the result of the recent case of litigation connected with Pfeifer's wharf. The injunction which was asked for, to prevent the building of this wharf, was not granted by the courts. A causeway 175 yards in length now extends out from the shore to nine feet of water. It is unquestionable that this wharf and causeway detract much from the benefit formerly derived from the scouring effect of Paradise Creek and the bay included between the wharf in question and Town Point.

If a "port-warden's line" has ever been established at this part of the harbor, it is possibly not known, but it is certainly not respected.

We find slight and rather peculiar changes in the bed of the harbor between the county bridge across the Eastern Branch and the confluences of the two branches. We find a slight tendency of the channel to deepen immediately and for some little distance below the bridge.

Further down (some 800 yards below the bridge) shoaler water, which, as far as is known, has always existed, is encountered, and continues until the influence of the Southern Branch is felt. The depth of the shoaler water referred to has changed but little since the soundings were taken by the Coast Survey. It appears to have filled in very slightly. Its worst feature seems to be that the shoal is slowly extending along to the wharves immediately below the ferry. I attribute these changes to the existence of the county bridge across the Eastern Branch. The stream is considerably contracted at this point by a long causeway, which constitutes the southern extremity of the bridge.

This accounts, in my opinion, for the slight deepening immediately below the bridge, and also for the slight additional shoaling below, the removed material being deposited as soon as the wider portion of the stream is reached.

It will be perceived that a considerable deepening has taken place immediately at the confluence of the two branches. This would seem to be but the mere result of the changes just referred to, the gradual extension of the shoaler water near the ferry seeming to contract the width of the Southern Branch channel, and causing it to make deeper water.

From this point on toward the entrance of the harbor, and also in following up the course of the Southern Branch, the water in the channel seems to have pretty generally maintained its original depth.

The flats on the Portsmouth side have filled in to a considerable extent.

As stated above, the soundings opposite the navy-yard were taken by the Coast Survey in 1866. A considerable amount of dredging has since been done there by the Government.

On the whole, the condition of the harbor of Norfolk does not appear to have materially deteriorated since 1854, and it appears to me that the apprehensions of the people concerning it are rather exaggerated.

The area of cross-section at the entrance to the harbor may have diminished; if so, but very slightly, and the capacity and average depth of the harbor appear to be fully as great as seventeen years ago.

It would be well for the city to make every effort to prevent the continued encroachment of the wharves, unless duly authorized and constructed in accordance with some intelligent system. And, while providing for the future, it would also be well, if possible, to get rid of those structures already in existence which tend to injure the condition of the harbor.

In my opinion, it would be injudicious on the part of the General Government to attempt any improvement of Norfolk Harbor at present.

In conclusion, I beg to express my thanks to Messrs. Weyss and Thompson for the energy and skill displayed by them during the prosecution of this survey.

I am, major, very respectfully, your obedient servant,

CHAS. B. PHILLIPS,
Captain of Engineers, United States Army.

Major W. P. CRAIGHILL,
Corps of Engineers, United States Army, Baltimore, Maryland.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In obedience to law, an engineer report of the survey of Otter Creek, Vermont, from Vergennes to its outlet on Lake Champlain.

MARCH 6, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *March* 5, 1872.

The Secretary of War has the honor to transmit to the United States Senate and House of Representatives an engineer report of the survey of Otter Creek, Vermont, from Vergennes to its outlet on Lake Champlain, in compliance with the provisions of the act of March 3, 1871, and in addition to other reports required by said act, previously transmitted to Congress.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 1, 1872.

SIR: I herewith transmit a copy of the report of Lieutenant Colonel John Newton, Corps of Engineers, upon the survey of Otter Creek, Vermont, from Vergennes to its outlet on Lake Champlain, made in compliance with the act of March 3, 1871, making appropriations for certain public works on rivers and harbors.

Three estimates are presented for the improvement of the navigation to Vergennes: 1. By dredging only, $51,000; 2. A more complete project by the addition of crib or pile work, with the object of narrowing the channel and securing a more permanent improvement, $106,842; and, 3. A modification of this by the omission of works of only probable necessity, or of such as may be postponed for the present, $58,146. This last would be sufficient for a material improvement of navigation, and, in the opinion of Lieutenant Colonel Newton, would likewise probably be permanent.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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ARMY BUILDING, HOUSTON AND GREENE STREETS,
New York, February 15, 1872.

GENERAL: I have respectfully to transmit herewith two sheets of tracings of survey of Otter Creek, Vermont, from Vergennes to its outlet; also tracing of general map of the country drained by the creek and its tributaries, and copies of Mr. D. White's report upon the improvement of the navigation from Vergennes to Lake Champlain, and of paper furnished by his honor the mayor of Vergennes, upon the amount of business likely to be benefited by the removal of ex sting obstructions to navigation.

The survey of this creek was assigned to Mr. D. White, civil engineer, with written and verbal instructions from my office concerning the essential points to be observed.

The survey and report of Mr. White have been carefully made, and contain all the matter essential to a comprehension of the problem, and the means of its solution.

The results of the examination show that the navigation of the creek can be sufficiently improved, and maintained in good state.

I am not satisfied that the simple dredging of the basin at Vergennes would make a permanent improvement, and have consequently indicated lines of crib or pile work to be constructed with the object of narrowing the channel and of forming a place of deposit for the sand, which may be held suspended in the agitated waters of the falls. The cost of works of improvement will not exceed that of dredging, so that either course, as a thorough examination should dictate, might be adopted. Fascine groins are indicated at various places along the banks; the cost of this mode of construction is little, and its application in this locality, wherever it may be necessary to regulate the cross-sections, or prevent erosion, would be very convenient.

Looking to a future complete improvement of the creek, several points of interest are noted, viz: Shore protection at Sharkey Bend, constructing a more gradual curve at Crittenden Bend, changing the outlet of Dead Creek, and filling the re-entering at Fort Cassin. All of these, however, are matters which may be delayed for a term of years, and, perhaps, may never be needed.

I submit three estimates: That of Mr. White, for dredging alone, $51,000; a second, that of a complete project, $106,842; and a third, combining dredging, fascine-work, and diking, amounting to $58,146. The last would be sufficient for a great improvement of navigation, which would, probably, likewise be permanent.

Respectfully submitted.

JOHN NEWTON,
Lieutenant Colonel Engineers, Brevet Major General.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, United States Army.

FORT MONTGOMERY, ROUSE'S POINT, N. Y.,
January 23, 1872.

GENERAL: I have the honor to submit the following report in relation to the improvement of "Otter Creek." Otter Creek is the largest stream in the State of Vermont.

As may be seen by map A, of the maps A and B, herewith transmitted, it rises at a place called Mount Tabor, in the towns of Peru and

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Dorset, Vermont, near the head of the Rattenkill River. Its course from its origin to the town of Rutland is nearly north, and from thence it changes to northwesterly, through Addison County to Lake Champlain, at a point called Fort Cassin; its entire length being about ninety miles. Its tributaries are as follows: From the southwest it receives in the town of Ferrisburgh, at a point about five miles below Vergennes, a large, sluggish stream called "Dead Creek," which originates in the town of Bridport; Lemonfair River debouches in at Weybridge, originating at Orwell and Shoreham. In Rutland, Tinmouth River empties in, and at Mount Tabor, a small stream called Mill River; while from the east it receives the waters of New Haven River, in the town of New Haven, Vermont. There also empties in Middlebury River at Middlebury, Leicester River at Leicester, Furnace River at Pittsford, with Cold River and Mill Creek in Clarendon—all of which are said to be considerable mill-streams, the whole making a watershed of probably not less than 850 square miles.

The creek is subject to sudden rises, and during my operations in the month of August it rose six feet in about thirty-six hours. Above Middlebury and Pittsford, Otter Creek is said to be a still, deep stream. At Middlebury, Weybridge, and Vergennes, are five mill-sites—the latter having from the mill-pond to the basin below a fall of about 36½ feet. From this point to Lake Champlain, a distance of eighty miles, the creek has been made the subject of a careful survey.

As may be seen by reference to Map B, herewith transmitted, the creek has a mean width of about 185 feet, between banks, and an average depth of about 10½ feet;. its maximum rise above the plane of low water is about 7 feet, with a mean velocity of .2 at low, and about 6.2 miles per hour at high water. The latter rate of current, however, probably obtains only during the summer and autumn freshets when Lake Champlain (into which it empties) is at a low stage, which gives the volume greater declivity.

From the nature of the present banks, the underlying timber, and general appearance of the adjacent lands, it is more than probable that this section of the stream had a much greater width at no very distant date, but owing doubtless to the natural result of cultivating the water-shed, it has been reduced to its present limits.

The banks of the creek, or more properly its "intervals," vary in level from one to ten feet above the plane of low water, the lower portions of which are covered with a dense growth of marine plants, and the higher, with a few exceptions, with willow, alder, soft maple, and oak timber.

The depth of water required for purposes of navigation for steamers and sail-craft plying between ports on Lake Champlain and Vergennes, being 8 feet, as may be seen by the soundings shown in the Map B, the navigation has become greatly impeded by the filling up of the basin at Vergennes, and the formation of shoals and bars at Bull Brook, Smith's Bend, Brick-yard, Dead Creek, Crittenden Bend, and Fort Cassin, points farther down.

As to the cause and nature of these deposits: Many years since, two loaded cribs, each about 25 by 18 feet, were sunk in the basin at respectively 300 and 500 feet, below the foot of the falls, for the purpose of booming logs, and at probably about the same time were driven a clump of some thirty piles, at a point nearly opposite the upper coal-yard, for the center pier of a railroad-bridge. These stopping and holding the *débris* coming down from the saw-mills located on the tributaries above, which, until a very recent period, it was the custom to waste into the stream, formed a nucleus for the collection of silt and the propagation,

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of the shoals and bars met with in the basin proper. As also the formation of these at the other points mentioned above, except that at Crittenden Bend and Fort Cassin, which are due to nearly the same cause, viz: natural obstructions, such as stone existing in the soil, and the toppling over into the stream and lodgement at its bottom of large maple and oak trees, aided by the local neutrality of the current at those points, the latter resulting from a deflection of the current by irregular indentations in the banks, the shoal at Crittenden Bend not being a formation of alluvian, but a prominent projection of the original bank, which the corrosive action of the creek has been too feeble to remove.

The contraction of the channel at Fort Cassin is due to the intrusion of the margin of an extensive alluvian deposit formed in the bay at the left of the fort, and reaching out nearly, if not quite, to the middle of Lake Champlain. This flat is the result of a gradual accumulation for perhaps centuries, caused by the flanking and sudden deflection to the south and southwest of the current by "Fort Cassin Point," projecting into its path, which, meeting the opposing currents of Lake Champlain on reaching the bay, releases its burden of silt, brought down from its extensive water-shed. This alluvial deposit is very evenly distributed, as shown by the soundings on the accompanying map, it varying but little in depth for many rods, until at the very verge of the flat; the water then deepens rapidly to fifty feet, and probably more. Fifty feet being the maximum length of the sounding-line used, I was unable to carry on investigations beyond this limit.

In looking at the cause of these obstructions, and providing a remedy, it is also necessary to regard the business interests established which may be affected by our action, and to inquire whether they are of such a nature and extent as to require the full capacity of the stream, and hence the elimination of all the intruding matter. As will be seen by a glance at the map, both sides of the Vergennes Basin are occupied for purposes of commerce, the eastern bank for the reception and shipments of lumber, coal, wood, &c., and the western, together with the crest of the falls, by a large number of manufacturing establishments, all of which receiving and shipping large quantities of freight, in the way of raw material and manufactured wares, through this natural commercial highway, as will be shown by the statistical report to be furnished by his honor G. W. Grandey, mayor of the city of Vergennes. Deeming it necessary, I would respectfully recommend the following plan of improvement, which I have arranged in the order of their relative importance.

I. Remove the loaded cribs and old piles and dredge out the basin to a depth of eight (8) feet from the "steamboat landing" and as far up as the outlet of "Pot-ash Brook," thence along the west shore or channel of the same depth, (100) one hundred feet wide, as far up as the Horse-nail Company's wharf at the foot of the falls, and by thus dividing the work in the basin, the pressing need of a water communication for the manufacturing interests along the banks would be soonest relieved. This will require the removal of—

48,200 cubic yards of silt and saw-mill *débris* at 50 cents per cubic yard	$24,100
To which must be added, in order to complete the work in the basin and render its whole area available, the removal at some future time of 19,200 cubic yards of the same material at 50 cents	9,600
Removing two loaded cribs, at $200 each	400
Removing thirty piles, at $5 each	150
Contingencies	3,450
Total	37,700

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II. *Bull Brook.*—At this point the shoals seem to be composed of stone, clay, and sand, the contents of which amount to—

5,700 cubic yards, at 55 cents	$3,135
Contingencies	365
Total	3,500

III. *Smith's Bend.*—The quantity of material to be removed amounts to—

2,900 cubic yards compost, clay, and sand, at 50 cents	$1,450
Contingencies	150
Total	1,600

IV. *Brick-yard.*—Nature of shoals, clay and sand—

Quantity, 4,200 cubic yards, at 50 cents	$2,100
Contingencies	200
Total	2,300

V. *Dead Creek.*—

1,900 cubic yards of sand and loam, at 50 cents	$950
Contingencies	150
Total	1,100

VI. *Crittenden Bend.*—Nature of bar, a species of blue clay, apparently free from stone—

Amount to be removed, 1,100 cubic yards, at 60 cents	$660
Contingencies	140
Total	800

VII. *Fort Cassin.*—Ordinary alluvion—

Amount to be removed, 8,000 cubic yards, at 40 cents	$3,200
Contingencies	300
Total	3,500

VIII. For the removal of 50 trees from the margin of the stream, to prevent their falling in and impeding navigation, at $10, $500.

RECAPITULATION.

Vergennes Basin	$37,700
Bull Brook	3,500
Smith's Bend	1,600
Brick-yard	2,300
Dead Creek	1,100
Crittenden Bend	800
Fort Cassin	3,500
Removal of 50 trees	500
Total	51,000

However, instead of dredging away the intruding margin of the above-mentioned shoal at Fort Cassin, I think the desired improvement could be made and maintained at less expense by the construction and sinking of about 500 linear feet of crib-work of such height as to bring the top even with the plane of low-water, as shown in the position at the dotted line at C.

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By this arrangement, I think, a sufficient proportion of the volume would be retained to effect the desired end without causing a radical change in the place of the present general deposit, as the upper portion of the volume would, during its high stages, pursue its natural course by flowing over the crib-work.

Crib-work suited to the above purpose would require to be of the following dimensions, viz: average height, 4 feet, and width, 8 feet, and would cost $4 lineal foot—$2,000 for the 500 feet—which would reduce the ultimate expense to the amount of $1,200.

In regard to the maintenance of the other improvements when made, I may say that, in view of the effective corrosive action of the current under the present circumstances, as may be seen by the irregular depths to which it has carried its channel until it has reached soil of a more permanent character, such as clay, stone, and gravel, the very brief period during which the current maintains its level above that of its banks at its higher stages, the well-protected state of the banks by marine plants and trees of various species, and the discontinuance of the practice of wasting saw-mill litter and *débris* into the stream, I think that additional works looking to that end, except the removal of the trees above referred to, growing immediately upon its shores, are unnecessary.

Very respectfully, your most obedient servant.

D. WHITE,
Superintendent and Engineer.

Brevet Major General JOHN NEWTON,
United States Engineers.

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Comparative estimates.

Locality of improvement.	Designation of work.	First project.		Second or completed project.		Second project modified by omission of works of probable necessity only or of such as may be postponed for a term of years.	
Basin at Vergennes	Dredging from falls at Vergennes to steamboat landing	*$37,095		†$15,351		$15,351	
	Removing cribs, $440; removing piles, $165	605					
	Shore protection			1,760			
	Diking			14,520		14,520	
	Fascine-work			4,858		3,000	
			$37,700		$36,489		$32,871
Bull Brook	Dredging	3,500		920		920	
	Fascine-work			2,270		2,270	
			3,500		3,190		3,190
Sharkey Bend	Shore protection			5,720			
					5,720		
Smith's Bend	Dredging	1,600		183		183	
	Fascine-work			3,168		3,168	
			1,600		3,351		3,351
Brick-yard	Dredging	2,300		2,444		2,444	
	Fascine-work			2,165		1,800	
			2,300		4,609		4,244
Dead Creek	Dredging	1,100		1,430		1,100	
	Diking			1,815			
	Fascine-work			1,742			
	Dredging new outlet			6,111			
			1,100		11,098		1,100
Gage's Bend	Shore protection			1,200		1,200	
					1,200		1,200
Crittenden Bend	Dredging	800				800	
	Shortening bend			11,733			
	Diking			13,310			
			800		25,043		800
Fort Cassin	Dredging	3,500					
	Fascine-work			4,752			
	Crib-work			10,890		10,890	
			3,500		15,642		10,890
Along the banks	Removing trees	500		500		500	
			500		500		500
Total			51,000		106,842		58,146

* To eight feet in depth. † To ten feet in depth.

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The following schedule contains an estimate of the imports and exports to and from Vergennes, Addison County, Vermont, through Otter Creek, for the year 1871:

Tons.	Articles transported.	Value.
2,500	Pine lumber—1,700,000 feet; value, $62,000	$62,000 00
100	Sash, doors, and mouldings—100 tons; value, $3,000	3,000 00
350	Plaster—350 tons; value, $2,100	2,100 00
100	Curtain rolls—100 tons; value, $7,500	7,500 00
380	Timber—190 cords; value, $2,000	2,000 00
2,000	Wood—1,000 cords; value, $4,000	4,000 00
525	Merchandise—525 tons; value, $262,500	262,500 00
100	Steel, iron, nails, &c.—100 tons; value, $8,000	8,000 00
70	Molding-sand—70 tons; value, $300	300 00
95	Excelsior—95 tons; value, $2,375	2,375 00
50	Spokes, hubs, and fellies—50 tons; value, $6,000	6,000 00
1,100	Kaolin—1,100 tons; value, $18,000	18,000 00
400	Brick—200,000; value, $1,500	1,500 00
750	Stone—500 perch; value, $1,000	1,000 00
300	Sand and gravel—300 tons; value, $600	600 00
50	Salt—50 tons; value, $1,000	1,000 00
1,800	Coal—1,800 tons; value, 12,600	12,600 00
400	Staves—400 tons; value, $8,000	8,000 00
3,300	The steamer, Curlow, of 100 tons, 165 round trips, estimated to carry 10 tons each way, making 3,300 tons; value, $330,000.	330,000 00
	And carrying 15 passengers each way, making 495 passengers, each $1 65; value, $6,187 50.	6,187 50
14,370	Total	738,662 50

CITY OF VERGENNES, VERMONT,
January 24, 1872.

I, George W. Grandey, mayor of the city of Vergennes, hereby certify that I have carefully examined the statements of the business men of Vergennes, from which the foregoing schedule has been compiled, and being well acquainted with them and their business, I have full confidence in the correctness of their several statements, and can safely vouch that, in my judgment, they are within the bounds of truth.

I can further say that no inconsiderable amount of transportation, both to and from Vergennes, not enumerated in this schedule, is done through said river every season by business men, manufacturers, and merchants in adjacent towns and towns in Addison County, and also that a very large amount of transportation to and from Vergennes of goods, wares, and merchandise, and other property of great weight and bulk, has been done by railroad for many years past which would have been done through said creek if its channel and its principal basin had been open and unobstructed.

In testimony whereof I have hereunto set my official hand and the seal of said city, at Vergennes, Addison County, Vermont, this 24th day of January, A. D. 1872.

[SEAL.]

GEO. W. GRANDEY,
Mayor of the City of Vergennes, Vermont.

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LETTER

FROM

THE SECRETARY OF THE INTERIOR,

COMMUNICATING,

In compliance with a resolution of the Senate of March 4, 1872, information relating to the sale of lands by the State of Texas to the United States, known as the Pan Handle.

MARCH 6, 1872.—Ordered to lie on the table and be printed.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., March 5, 1872.

SIR: I have received Senate resolution of yesterday requesting the Secretary of the Interior "to furnish the Senate with copies of two letters written by Hon. *L.* D. Evans in 1867 and 1868, upon the subject of the sale of lands by the State of Texas to the United States, known as the Pan Handle," and in reply have the honor to transmit herewith a copy of a letter addressed, in this city, on the 6th of May, 1868, to the Commissioner of the General Land-Office, by *L.* D. Evans, which, from its tenor, is presumed to be one of those called for. It is the only one from him which the most diligent search has been able to find on the files of the General Land-Office. There is none on the files of the Department.

Very respectfully, your obedient servant,

C. DELANO,
Secretary.

Hon. SCHUYLER COLFAX,
Vice-President, and President of the Senate.

WASHINGTON, *May* 6, 1868.

DEAR SIR: I understand that you think it would be wise policy on the part of Texas to relinquish all her vacant and unappropriated land to the United States, and exchange her local for the general land system of the United States.

As this subject will probably come before the Texas convention, now soon to assemble, you may confer a great service to my State by giving, in writing, your reasons for your opinion.

I am, with great respect,

L. D. EVANS.

Hon. JOSEPH S. WILSON,
Commissioner of Lands.

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42D CONGRESS, 2d Session. | SENATE. | EX. DOC. No. 46.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

COMMUNICATING,

In compliance with a resolution of the Senate of February 19, 1872, *information in relation to what amount is due to any of the States lately in insurrection, under provisions of the 12th section of the act of Congress approved June* 7, 1862, *entitled "An act for the collection of direct taxes in insurrectionary districts, and for other purposes;" also "whether any, and, if so, what amount has been paid to any of said States under and in accordance with the provisions of said act or other acts amendatory thereof."*

MARCH 6, 1872.—Referred to the Committee on Finance and ordered to be printed.

TREASURY DEPARTMENT,
Washington, D. C., March 4, 1872.

SIR: By resolution of the Senate of February 19, 1872, I am directed "to inform the Senate what amount is due to any of the States lately in insurrection, under provisions of the 12th section of the act of Congress approved June 7, 1862," entitled "An act for the collection of direct taxes in insurrectionary districts and for other purposes;" also, "whether any, and, if so, what amount has been paid to any of said States under and in accordance with the provisions of said act, or other acts amendatory thereof."

In reply I herewith inclose a copy of a letter of the 27th ultimo from the Commissioner of Internal Revenue, together with copies of papers referred to therein.

These inclosures contain all the information in the possession of the Department on the subject. No payment has been made, and it will be seen that, from the character of the report made by the tax commissioners, it will be nearly or quite impossible to determine the sums due, if any, to any of the late insurrectionary States under the section of law mentioned.

I am, very respectfully,

GEO. S. BOUTWELL,
Secretary of the Treasury.

Hon. SCHUYLER COLFAX,
President of the Senate United States.

TREASURY DEPARTMENT,
OFFICE OF INTERNAL REVENUE,
Washington, D. C., February 27, 1872.

SIR: Senate resolution of February 19, 1872, directing the Secretary the Treasury to inform the Senate what amount is due to any of the

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States lately in insurrection, under the provisions of the 12th section of the act of Congress approved June 7, 1862, entitled "An act for the collection of direct taxes in insurrectionary districts within the United States, and for other purposes;" also, "whether any, and, if so, what amount has been paid to any of said States, under and in accordance with the provisions of said act, or other acts amendatory thereof," has been referred to this office, with a request that I should furnish your office with such facts as are known to me, in reply to the resolution herein mentioned.

Lands were sold for non-payment of United States direct taxes charged against them, in the States of Virginia, South Carolina, Florida, Arkansas, and Tennessee.

The tax commissioners in South Carolina represented that they were satisfied that a large part of the lands sold by them were abandoned by the owners to aid in the rebellion, and quite an amount of money was realized from proceeds of leases and sales in that State.

The governor of South Carolina made application to you in January, 1870, through Senator Sawyer, for the amount due that State under the 12th section of the act of Congress approved June 7, 1862.

The application was referred by your office to this office for information, and the matter was given a careful examination, and a letter was addressed by this to your office, dated February 11, 1870, in which the particulars were given in detail.

I respectfully call your attention to that letter. The tax commissioners for the several States did not report explicitly as to the precise lands which were abandoned by the owners to aid in the rebellion. It is, therefore, impracticable to determine from the records of this office as to how much is due, if anything, to any of the late insurrectionary States, under the provisions of the law referred to in the Senate resolutions.

I have no knowledge of anything having been paid to any of the said States, under and in accordance with the provisions of the act herein referred to, or any act amendatory thereof. The Senate resolution is herewith returned to you.

Very respectfully,

J. W. DOUGLASS,
Commissioner.

Hon. GEO. S. BOUTWELL,
Secretary of the Treasury.

TREASURY DEPARTMENT,
OFFICE OF INTERNAL REVENUE,
Washington, February 11, 1870.

SIR: I have the honor to acknowledge the receipt of a letter addressed to you by His Excellency Robert K. Scott, governor of South Carolina, dated January 7, 1870, and referred by you to this office January 11, 1870, relative to the amount due, if anything, to the State of South Carolina from the United States, on account of proceeds from sales and leases of abandoned lands, under the provisions of the United States direct tax laws.

You request me to communicate to you any information in my possession which will aid in determining the amount due, if anything, to said State.

I herewith inclose a copy of a statement of receipts and expenses,

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submitted by the United States direct-tax commissioners for South Carolina, under date of January 26, 1870.

This statement sets forth the amounts received under the tax acts, relating to abandoned lands, and the sources from which the receipts were derived, in detail.

Also, the expenses incident to the proceedings subsequent to March 3, 1865.

It appears by the statement that the amount of $192,842 58 has been received by the commissioners under the provisions of sections 9 and 11 of act of Congress approved June 7, 1862, but it is observed that section 6 of act of March 3, 1865, provides that "the expenses caused by or incident to the proceedings of any board of tax commissioners shall be paid by the commissioners out of the proceeds of the sales which have been or shall be made by them, of any lands or tenements: *Provided, however*, That the bills of such expenses shall be first submitted to and approved by the Secretary of the Treasury."

The expenses embraced in the statement under the head of expenses, which may properly be deducted from the amount received under sections 9 and 11, act of June 7, 1862, as nearly as I am at present able to determine, amount to $52,535 14, but this deduction includes only the expenses properly deductible, embraced in the statement, and which have been incurred subsequent to March 3, 1865. The expenses incident to the proceedings of the board of commissioners, prior to the 3d of March, 1865, were paid by Treasury warrants, and the accounts of the same kept in the Treasury Department, and not by the tax commissioners. Whether these expenses, incident to the proceedings of the board prior to March, 1865, are included in the provisions of section 6, act of March 3, 1865, and properly deductible from the proceeds of sales, I am not fully satisfied.

By the provisions of section 12, act of Congress approved June 7, 1862, one-fourth of the proceeds of the leases and sales of abandoned lands are to be paid over to the *governor* of the State wherein the lands are situated, or to his authorized agent, after insurrection has ceased and the State legislature and State officers have been properly elected, and the fact has been proclaimed by the President, for the purpose of reimbursing loyal citizens, or for such other purposes as the State may direct.

And further, that one-fourth of the proceeds of leases and sales of abandoned lands are to be paid over to the *State* as a fund to aid in the colonization or emigration from said State of any free person of African descent who may desire to remove therefrom to Hayti, Liberia, or any other tropical state or colony.

As to the latter one-fourth, I have to suggest that this concession is so repugnant to the spirit of subsequent legislation that it may be regarded as substantially repealed. It was granted before President Lincoln's proclamation of emancipation. That act and the amendment of the Constitution, which were specially designed to place persons of African descent upon precisely the same civil and political footing with all other persons, *in the said State where they were born*, very clearly overruled a policy which invited them to leave that soil.

No money should be paid to the State of South Carolina to be applied to such a scheme, and this *one-fourth* cannot, under the law, be paid for any other. I conceive that the appropriation itself should be regarded as repealed, so far as this *one-fourth* is concerned.

I am also of the opinion that, inasmuch as titles to certain lands sold under the direct-tax laws in South Carolina are yet contested, and a

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quantity of the lands undisposed of, that it is impracticable, at this time, to fix upon an exact amount due, if anything, to the State of South Carolina.

Very respectfully,

C. DELANO,
Commissioner.

Hon. GEO. S. BOUTWELL,
Secretary of the Treasury.

OFFICE OF THE U. S. DIRECT TAX COMMISSIONERS,
Beaufort, S. C., January 26, 1870.

SIR: We have the honor to acknowledge the receipt of your communication of the 13th instant, directed to the chairman of this commission, and, in reply to the first interrogatory, beg leave to state that the following sums have been received by this commission up to January 1, 1870, under the provisions of sections 9 and 11 of the act of Congress approved June 7, 1862, to wit:

Rents	$21,899 70
Sales by loyal citizens	41,768 00
Army and Navy sales, one-fourth payments	72,336 75
Deferred three-quarter payments of Army and Navy sales	56,361 50
Interest, less special rents	476 63
Total	192,842 58

Under the instructions of the President of the United States of the date of September 16, 1863, and section 6 of the act of Congress attested July 16, 1866—

Head of family sales	$34,243 28
School-farm rents	26,015 73
Total	60,259 01

Under section 8 of the act of Congress attested July 16, 1866, sales of school-farms, houses and lots in Beaufort, South Carolina, and at Port Royal, South Carolina, $56,216 85; under section 7 of same act, $54 75; under section 13 of the act of March 3, 1865, certificate fees, $4,289 50.

Under the instructions of the Commissioner of Internal Revenue:

Special rents	$17,987 80
Sales of bones of animals	235 00
Total	18,222 80

From miscellaneous sources:

Forfeitures on sales	$50 00
Sales of Port Royal plats	23 50
Costs of advertising, returned	30 84
Sales of lumber, &c., from houses fallen	100 90
Total	205 24

In reply to the second interrogatory, we state that all the money received has been reported to the office of the Commissioner of Internal Revenue, and all this has been covered into the United States Treasury, except as hereinafter stated.

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In reply to the third interrogatory, we state that it has been reported *separate* and *distinct* by our monthly returns, made under instructions of the Commissioner of Internal Revenue dated July 6, 1866.

To the fourth interrogatory, we state that a part of said moneys has been appropriated and used under acts of Congress and instructions of the President of the United States, from March 3, 1865, and *not* covered into the Treasury of the United States, to wit:

Under section 6 of the act of Congress attested March 3, 1865:

Surveys	$31,801 57
Clerk-hire	15,817 79
Incidentals, including messenger and servant-hire	2,216 97
Stationery	276 34
Printing and advertising chargeable to sales	667 96
Printing and advertising *not* chargeable to sales	549 62
Internal revenue taxes	768 56
Miscellaneous, mostly repairs of buildings	436 33
Under section 13 of said last-named act:	
Certificate fees	4,055 47

Under instructions of the President of the United States dated September 16, 1863:

For salaries of school-teachers, repairs of school-houses, and incidental school expenses	$23,496 44

Under section 8 of the act of Congress attested July 16, 1866, entitled "An act to continue in force and to amend 'An act to establish a bureau for the relief of freedmen and refugees,' and for other purposes."

Transmitted to the Commissioner Bureau Refugees, Freedmen and Abandoned Lands, under directions of the Treasury Department	$54,765 09
Paid out for advertising, printing, and surveys	1,451 76

Prior to March 3, 1865, all the accounts of our commission were audited by the Fifth Auditor, and paid by Treasury warrants, and, of course, the exact amount can be ascertained by the books of the Treasury Department. It is impossible, from data in this office, to more than approximate the amount, as no returns were ever made to us of what was actually paid in Washington.

It is our opinion that, under section 6 of the act March 3, 1865, those expenses thus paid should be deducted from the amount of rents and sales under sections 9 and 11 of the act of June 7, 1862, to be accounted for under section 12 of the same act.

Very respectfully,

WM. HENRY BRISBANE,
W. E. WORDING,
United States Direct Tax Commissioners for the District of South Carolina.

C. DELANO,
Commissioner Internal Revenue.

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42D CONGRESS, 2d Session. } SENATE. { EX. DOC. No. 47.

LETTER

FROM

THE SECRETARY OF THE NAVY,

COMMUNICATING,

In compliance with a resolution of the Senate of the 2d instant, information in relation to the wharf or river frontage at the port of New Orleans now claimed or occupied by the Government.

MARCH 8, 1872.—Ordered to lie on the table and be printed.

NAVY DEPARTMENT,
Washington, March 7, 1872.

SIR: I have the honor to acknowledge the receipt of an attested copy of the resolution of the Senate, adopted on the 2d instant, directing the Secretary of the Navy to transmit to the Senate any information on file in the Navy Department, or that he may be able to obtain, "showing what portion, if any, of the wharf or river frontage at the port of New Orleans is now claimed or occupied by the Government; and, if so, upon what ground and for what purpose the same is so claimed or occupied;" and, in compliance therewith, to transmit herewith a copy of a report from the Chief of the Bureau of Yards and Docks on the subject.

Very respectfully, &c.,

GEO. M. ROBESON,
Secretary of the Navy.

Hon. SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

NAVY DEPARTMENT, BUREAU OF YARDS AND DOCKS,
Washington, D. C., March 5, 1872.

SIR: I have the honor to acknowledge the reference to this Bureau of a communication from the Senate of the United States, dated March 2, calling for information in reference to any wharf or river frontage at the port of New Orleans now claimed or occupied by the Government, and respectfully report:

The only property at the port of New Orleans belonging to the Government, the title-deeds of which are in this Bureau, is a tract of land situated just below the city, and on the opposite side of the river, containing about twenty-five acres, and having a frontage on the river of

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383 feet 5½ inches. This property was purchased on the 14th February, 1849, for the sum of $15,000.

It is known to the Bureau that during the war of the rebellion certain pieces of land in New Orleans were used for naval purposes, but no such property is now claimed or occupied by this Department for uses coming under the cognizance of this Bureau.

The resolution is herewith returned.

I am, very respectfully, your obedient servant,

C. R. P. RODGERS,
Chief of Bureau.

Hon. GEO. M. ROBESON,
Secretary of the Navy.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In obedience to law, an engineer report of the survey of Cumberland River, between Nashville and the head of steamboat navigation.

MARCH 8, 1872.—Referred to the Committee on Commerce and ordered to be printed

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WAR DEPARTMENT,
March 7, 1872.

The Secretary of War has the honor to further comply with the requirements of the provisions of the acts of July 11, 1870, and March 3, 1871, by transmitting to the United States Senate and House of Representatives an engineer report of the survey of that portion of the Cumberland River between Nashville and the head of steamboat navigation; which, in connection with those previously transmitted to Congress, completes the report of the survey of this river required by said acts.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 5, 1872.

SIR: I herewith transmit a copy of the report of Major G. Weitzel, Corps of Engineers, upon the survey of Cumberland River, from Nashville to the head of steamboat navigation, which completes the survey of this river in compliance with the provisions of the acts of March 3, 1871, and July 11, 1870.

The report of the survey of the Cumberland, as far as completed at that time, was transmitted February 4, 1871, and printed in Ex. Doc. No. 60, part 2, Forty-first Congress, 3d session, and in my annual report of the 2d of October, last.

From the revised estimates now presented, it appears that the amount required for the improvement of this portion of the river is $235,331, which, in the opinion of Major Weitzel, would probably increase the depth of water to 3 feet at the lowest stage.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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UNITED STATES ENGINEER OFFICE,
Louisville, Kentucky, February 8, 1872.

GENERAL: I have the honor to submit the following report on the survey of the Upper Cumberland River:

The party under the immediate direction of Mr. S. T. Abert, civil engineer, took the field in July, 1871, and completed the field-work of the survey in November of the same year, after encountering great difficulties on account of the exceedingly low stage of the river, and sickness among the men.

The character of the country through which the Upper Cumberland flows, and the character of its own bed, were so fully described in my report of January 20, 1871, that it is not considered necessary to say anything additional on these subjects in this report.

Adopting the same divisions of the river which were adopted in the report of last year, the facts developed by this survey are as follows, viz:

First division.—Extending from Laurel River to the South Fork. The obstructions in this division until Smith's Shoals (also called the "Great Shoals") are reached, twenty-four miles from Laurel River, consist in heavy gravel bars, rocky *débris*, and ledges, and detached masses of rock. The descent is 1.29 feet per mile.

At the obstruction known as "Smith's Shoals," or the "Great Shoals," the river flows over ledges of limestone which resemble broad descending steps. At two points there is a vertical descent of two and a half feet. The total length of these shoals in nine miles, including the intervening pools and the descent, is 54 feet, or at the rate of 6 feet per mile. The greatest descent is at four localities, known as Shadowen Shoal, White Cliff Ripple, Long and Short Shoals.

Coal-barges have, in high stages of the river, navigated these shoals during the last thirty-five years, but with frequent losses.

Second division.—Extending from the South Fork to Nashville. The main features of this division resemble those of the first division, but are less formidable in their character.

The entire distance from Point Burnside, the head of steamboat navigation, and the point at which the South Fork empties into the Cumberland River to Nashville, is 326.71 miles, and the descent is 232 feet, or at the rate of 0.71 foot per mile.

The following table gives all the facts which were obtained by the survey of this division:

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Table giving the facts obtained by the survey of the second division, extending from the South Fork to Nashville.

Locality between Point Burnside and Nashville.	Distance from Point Burnside.	Length of each shoal and pool in succession.	Descent of the river.				Depth of low water.	Difference of level from Point Burnside.	Remarks.
			Fall of each shoal and pool.		Maximum fall in a given distance.				
			Total.	Average per mile.	Feet fall and distance.	Corresponding rate per mile.			
	Miles.	*Miles.*	*Feet.*	*Feet.*	*Feet. Distance.*	*Feet.*	*Feet.*	*Feet.*	
Point Burnside	0.							0.00	
Fishing Creek	5.								Sand and gravel bar.
Ford's Island	6.								
Cowan Shoal	7.								Rocky channel.
Forbush Bar	13.	0.33							Rocky reef at head and foot.
Gan's Island	23.								Right channel rocky.
Harmon's Island	29.								Rock to be removed.
Lilly or Wolf Island	34.								Short dam and rock excavation.
Belk's Island	37.								Trees and logs.
Wild Goose Shoal	45.3	0.57	3.25	5.70	0.457 in 300	8.03	0.5 to 3.2	40.25	Flat rock on left, and gravel bars.
Natural pool	45.87	2.08	0.82	0.39			2.4 to 7.6	41.07	
Indian Creek, Poplar Mountain	47.95	0.26	1.432	5.51	0.89 in 560	8.4	0.8 to 2.0	42.502	Large river stone.
Natural pool	48.21	1.80	0.683	0.38			2.8 to 9.9	43.185	
Long Bottom Island	50.01	0.31	0.833	2.69	0.74 in 1,000	3.93	1.3 to 5.7	44.018	Rocky rapids.
Natural pool	50.32	1.40	0.01	0.007			5.4 to 9.9	44.028	
Boyd's Island	51.72	0.18	0.266	1.48	0.266 in 960	1.46	1.2 to 5.5	44.291	Gravel bar in right channel.
Natural pool	51.90	1.13	0.01	0.008			4.9 to 15.0	44.304	
Black Fish Bar	53.03	0.49	3.066	6.26	1.24 in 400	16.37	0.4 to 3.8	47.37	Flat gravel-bar.
Natural pool	53.52	1.10	0.07	0.06			3.0 to 8.3	47.44	Nettie Miller rock.
Blankwiship's Bar	54.62	0.49	0.239	0.55	0.239 in 2,600	0.55	0.4 to 4.6	47.679	Channel on left ripple at head.
Natural pool	55.11	0.91	0.089	0.098			1.7 to 7.3	47.768	
Campbell's Island	56.02	0.66	2.143	3.24	0.765 in 700	5.75	1.5 to 5.2	49.911	Crooked channel, gravel-bar, snags.
Natural pool	56.68	2.37	0.944	0.39			1.1 to 10.0	50.855	
Snow Island	59.05	0.78	1.726	2.21	0.607 in 300	10.66	0.4 to 7.7	52.581	Gravel bar.
Natural pool	59.83	1.58	1.302	0.19			2.4 to 10.6	52.853	
Winfrey's Island	61.41	0.77	2.233	2.90	0.525 in 500	5.54	0.8 to 4.4	55.116	No special obstruction.
Natural pool	62.18	1.31	0.301	0.229			1.5 to 15.6	55.417	In navigable stages.
Winfrey's Ford	63.49	0.21	0.850	4.05	0.85 in 1,100	4.05	0.5 to 3.9	56.267	
Natural pool	63.70	3.02	0.073	0.020			2.16 to 13.0	56.34	
Self's Shoal	67.32	0.13	0.982	7.55	0.982 in 700	7.55	0.6 to 4.4	57.322	Flat gravel-bar and rock.
Natural pool	67.45	3.73	0.597	0.16			1.9 to 9.1	57.919	
Willis's Creek	71.18	0.36	1.559	4.33	1.392 in 700	10.50	0.5 to 3.0	59.478	Ripple at head over gravel.

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Table giving the facts, &c.—Continued.

Locality between Point Burnside and Nashville.	Distance from Point Burnside.	Length of each shoal and pool in succession.	Descent of the river.				Depth of low water.	Difference of level from Point Burnside.	Remarks.
			Fall of each shoal and pool.		Maximum fall in a given distance.				
			Total.	Average per mile.	Feet fall and distance.	Corresponding rate per mile.			
	Miles.	*Miles.*	*Feet.*	*Feet.*	*Feet. Distance.*	*Feet.*	*Feet.*	*Feet.*	
Natural pool	71.54	1.53	0.432	0.28			2.5 to 7.1	59.910	
Spearman's Island	73.54	0.51	0.674	1.32	0.46 in 1,200	2.02	0.5 to 5.2	60.584	Gravel bar short.
Natural pool	73.58	3.26	0.334	0.10			1.4 to 10.1	60.918	
Crocus Creek Bar	76.84	0.23	0.979	4.26	0.979 in 1,200	4.26	0.8 to 5.3	61.897	Bar on left leaving good water.
Natural pool	77.07	1.21	0.116	0.09			3.7 to 11.3	62.013	
Baherton Bar	78.28	0.19	0.626	3.29	0.626 in 1,200	3.29	1.4 to 5.0	62.639	Narrow channel on left.
Natural pool	78.47	1.93	0.300	0.15			2.6 to 8.7	62.939	
Short Bar	80.40	0.15	0.496	3.30	0.496 in 800	3.30	0.6 to 1.7	63.435	Gravel excavation.
Natural pool	80.55	0.17	0.007	0.04			2.4 to 5.4	63.442	
Rennix Bar	80.72	0.21	0.808	3.56	0.808 in ., 100	3.56	2.5 to 6.2	64.25	Gravel delta from mouth of creek.
Natural pool	80.93	1.31	0.107	0.08			5.6 to 10.4	64.357	
Scott's Island	82.24	0.28	0.027	0.10	0.85 in 800	0.56	2.7 to 8.5	64.384	Good water.
Natural pool	82.52	0.61	0.042	0.07			7.5 to 8.5	64.426	
Goose Creek Bar	83.13	0.23	0.184	0.80	0.079 in 400	1.04	1.7 to 7.4	64.61	Do.
Natural pool	83.35	4.96	0.215	0.04			3.0 to 14.6	64.825	
Beer Creek	88.32	0.49	0.043	0.09	0.018 in 1,000	0.09	5.0 to 11.6	64.868	Do.
Natural pool	88.81	1.50	0.129	0.08			8.8 to 15	64.997	
Walton Shoal	90.31	0.61	2.416	3.96	2.306 in 1,100	11.07	0.5 to 31	67.413	Irregular channel, rock and gravel.
Champ Shoal	92.85	0.76	3.40	4.47	1.934 in 900	11.35	0.3 to 3.0	70.945	Ledges of rock-crossing.
Natural pool	93.61	3.77	0.147	0.04			1.7 to 11.9	71.092	Channel diagonally, gravel.
Wilburn's Island	97.38	0.49	2.775	5.66	1.216 in 300	21.38	0.4 to 6.8	73.867	Best channel on the left, but narrow; obstructed by gravel.
Natural pool	97.87	1.19	0.057	0.05			2.4 to 8.6	73.924	
Gallaway's Bar	99.06	0.15	1.19	7.93	0.955 in 600	8.39	0.2 to 7.0	75.114	Ledge or rock.
Natural pool	99.21	1.29	0.421	0.30			1.6 to 7.4	75.535	
Murphy's Bar	100.5	0.19	0.247	1.30	0.093 in 300	1.64	0.5 to 7.9	75.782	Ledge of rock.
Natural pool	100.69	3.01	1.164	0.38			0.8 to 10.2	76.946	
Cloyd's Island	103.70	0.61	0.455	0.75	0.315 in 2.000	0.83	1.4 to 9.3	77.401	Good channel.
Natural pool	104.31	0.66	0.001	0.0015			7.8 to 11.9	77.402	
Mud Camp Bar	104.97	0.43	2.607	6.29	1.398 in 300	24.6	0.4 to 9.4	80.008	Rock at head, wide gravel bar.
Natural pool	105.40	1.41	0.75	0.53			1.0 to 10.5	80.758	
Stallcup's Island	106.81	0.30	1.514	5.04	0.997 in 800	6.58	1.3 to 5.3	82.279	Good channel.

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Natural pool	107. 11	3. 19	0. 313	0. 10				1. 6 to 13. 5	89. 583	
Bickerstaff's Island	110. 30	0. 47	1. 468	3. 12	0. 670 in	500	7. 13	0. 6 to 5. 9	84. 034	Crooked channel, gravel bar and rocky reefs.
Natural pool	110. 76	6. 38	1. 406	0. 22				1. 0 to 10. 8	85. 402	
Kirkpatrick's Bar	117. 14	0. 56	1. 554	2. 77	0. 649 in	700	4. 80	0. 5 to 3. 7	87. 016	Gravel bar and rocky reefs.
Natural pool	117. 70	4. 86	1. 885	0. 39				1. 1 to 11. 6	88. 901	
Simms's Bar	122. 56	0. 37	1. 595	4. 31	0. 879 in	600	7. 73	0. 5 to 2. 8	90. 496	Ledge of rock at head.
Natural pool	122. 93	5. 90	2. 323	0. 39				1. 0 to 10. 5	92. 819	
Simms's Ford	128. 83	0. 26	1. 361	5. 23	1. 115 in	700	8. 41	0. 8 to 2. 8	94. 181	Ledge and detached rock.
Natural pool	129. 09	0. 77	0. 268	0. 35				1. 0 to 5. 0	94. 448	
Kittle Creek Shoal	129. 86	0. 43	2. 328	5. 41	1. 813 in	900	10. 63	0. 8 to 3. 6	96. 776	Gravel bar and rock.
Natural pool	130. 29	0. 53	0. 089	0. 17				2. 7 to 4. 3	96. 866	
Shut-in Shoal	130. 82	0. 06	1. 629	27. 15	1. 629 in	300	27. 15	0. 6 to 1. 8	98. 495	Crooked and narrow.
Natural pool	130. 88	3. 18	0. 592	0. 18				2. 8 to 6. 8	98. 495	
Celnia Bar	134. 06	0. 25	2. 335	9. 42	1. 905 in	700	15. 05	0. 5 to 6. 0	101. 442	Gravel, snags, and rocks.
Natural pool	134. 31	2. 14						1. 0 to 8. 9		
Knob Creek	136. 45	0. 17						0. 8 to 3. 1		Snags and logs.
Natural pool	136. 62	6. 96						1. 0 to 12. 6		
Turkey Creek Island	143. 58	0. 91						0. 8 to 6. 3		Long Delta Island, contracted channel with gravel bars.
Natural pool	144. 49	1. 48						4. 4 to 12. 1		
Brimstone Island	145. 97	0. 82						0. 7 to 6. 8		Delta Island, crooked channel, gravel bars.
Natural pool	146. 79	1. 02						2. 2 to 14. 4		
Kirkpatrick's Bar	147. 81	0. 17						0. 7 to 5. 5		Land channel on left.
Natural pool	147. 98	0. 86						2. 1 to 13. 1		
Scantlin Island	148. 84	0. 79	4. 441	5. 62	1. 478 in	200	39. 92	0. 6 to 9. 5		Crooked channel, obstructed with rock and gravel.
Natural pool	149. 63	0. 52						2. 6 to 14. 6		
Hamilton Bar	150. 15	0. 30						0. 5 to 14. 1		Short gravel-bar.
Natural pool	150. 45	8. 86						1. 0 to 20. 6		
Simpson Island	159. 31	1. 14	2. 730	2. 39	0. 797 in	200	21. 04	0. 4 to 7. 7		Gravel bar and snags at lower end of island.
Natural pool	160. 45	0. 47						6. 4 to 19. 4		
Witche's Bar	160. 92	0. 55	0. 426	0. 77	0. 133 in	500	1. 4	1. 1 to 6. 0		No obstruction.
Natural pool	161. 47	0. 63						11. 6 to 18. 5		
Crib Creek Island	162. 10	0. 79	3. 93	4. 97	1. 68 in	250	34. 87	0. 7 to 6. 2		Channel irregular, gravel bars at head and foot.
Natural pool	162. 89	1. 65						4. 4 to 18. 4		
Brook's Island	164. 54	0. 19						1. 0 to 3. 7		No obstruction.
Natural pool	164. 73	1. 4						1. 9 to 17. 9		
Ray's Bar	166. 12	0. 19						1. 0 to 3. 5		No obstruction.
Natural pool	166. 32	2. 08						1. 3 to 16. 9		
Sackett's Island	168. 4	0. 38						1. 0 to 5. 3		No obstruction.
Natural pool	168. 78	1. 21						2. 8 to 7. 2		
Denin's Bar	169. 99	0. 21						1. 8 to 2. 7		No obstruction.
Natural pool	170. 2	5. 21						2. 3 to 24. 4		
Salt Lick Island	175. 41	0. 76						0. 6 to 6. 3		Rock excavation, small.
Natural pool	176. 17	3. 20						2. 7 to 14. 9		
Upper Holliman Island	179. 37	0. 78						3. 0 to 6. 0		Fragments or rock resembling a dam.
Natural pool	180. 15	0. 62						4. 6 to 12. 9		
Widow Holliman's Island	180. 77	1. 23	4. 235	3. 44	2. 175 in 1, 100		10. 44	1. 2 to 3. 7		Bar at head of island and conflicting channels.
Natural pool	182. 00	1. 39						2. 9 to 11. 5		
Indian Creek Shoal	183. 39	0. 79	5. 002	6. 33	2. 372 in	500	25. 05	0. 5 to 6. 0		Obstructing rock at head and foot; logs and trees in right chute.

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Table giving the facts, &c.—Continued.

Locality between Point Burnside and Nashville.	Distance from Point Burnside.	Length of each shoal and pool in succession.	Descent of the river.				Depth of low water.	Difference of level from Point Burnside.	Remarks.
			Fall of each shoal and pool.		Maximum fall in a given distance.				
			Total.	Average per mile.	Feet fall and distance.	Corresponding rate per mile.			
	Miles.	*Miles.*	*Feet.*	*Feet.*	*Feet. Distance.*	*Feet.*	*Feet.*	*Feet.*	
Pool	184.18	2.69					2.4 to 16.4		
Sullivan's Island	186.87	0.38					0.6 to 0.32		Short bar, not serious.
Natural pool	187.25	3.60					0.9 to 18.4		
Card Rock Bar	190.85	0.13					1.6 to 5.4		No obstruction.
Natural pool	190.98	1.69					2.9 to 21.4		
Beasley's Bar	192.67	0.21					1.4 to 5.6		No obstruction; snags.
Natural pool	192.88	3.18					2.9 to 20.9		
Sand Shoals	196.06	0.84	4.445	5.26	1.037 in 310	17.66	0.5 to 2.7		Gravel and rock excavation and short dam; right-hand channel to be improved.
Natural pool	196.90	5.84					0.8 to 7.4		
Rock Shoals } Natural pool	197.34						0.8 to 1.4		Merely a narrow ledge of rock. Small rock excavation.
Buch Shoals }	199.34						0.8 to 1.1		Do.
Turkey Creek Shoal	202.74	0.78					0.6 to 6.7		Short gravel-bar.
Natural pool	203.52	3.61					1.4 to 15.8		
Carthage Island	207.13	3.61					1.7 to 7.1		No obstruction.
Natural pool	207.67	0.73					6 to 12.6		
Goodall's Island	208.40	1.41					1.1 to 1.72		Do.
Natural pool	209.81	0.70					2.9 to 17.9		
Oberton's Towhead	210.51	0.38					0.5 to 5.4		Short gravel-bar.
Natural pool	210.89	2.10					1.4 to 17.6		
Rowland's Towhead	212.99	0.76					0.8 to 6.3		Fair channel.
Natural pool	213.75	2.29					3.6 to 23.4		
Cage's Island	216.04	0.45					3.9 to 9.1		No obstruction.
Natural pool	216.49	0.87					1.4 to 16.4		
Willow Island	217.36	0.25					2.9 to 11.7		Do.
Natural pool	217.61	0.34					4.0 to 32.9		
Hanging Rock Island	217.95	0.76					1.4 to 8.7		Good water; sudden bend to the left to avoid rock.
Natural pool	218.71	0.22					1.8 to 10.2		
Bartlett's Island	218.93	0.59	3.048	5.16	1.266 in 275	24.29	0.9 to 11.7		Rocky reefs in steamboat channel.
Natural pool	219.52	1.06					5 to 32.4		

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Parker's Island	220.58	0.01						1.8 to 7.1		No obstruction.
Natural pool	221.49	1.74						0.7 to 32.9		
Plunkett's Creek	223.23	0.65						1.9 to 3.7		Do.
Natural pool	223.88	1.41						3.5 to 20.4		
Rome Island	224.09	0.34						3.7 to 11.5		Do.
Natural pool	225.03	2.88						0.7 to 15		
Campbell's Island	227.91	0.61						1.7 to 7.7		Do.
Natural pool	228.52	2.73						1.0 to 19.4		
Dixon's Island	231.25	0.58						2.9 to 6.4		No obstruction; channel crosses to left.
Natural pool	231.83	1.33						3.4 to 19.4		
Cotton's Bar, Upper Island	233.16	0.35						1.8 to 5.3		No obstruction.
Cotton's Bar natural pool	233.51	0.73						1.8 to 4.3		Do.
Cotton's Bar, Middle Island	234.24	0.23						1.6 to 8.6		Do.
Cotton's Bar natural pool	234.47	0.60						3.4 to 9.4		Do.
Cotton's Bar, Lower Island	235.07	0.29						1.1 to 4.1		Do.
Natural pool	235.36	0.77						3.2 to 30.9		
Goose Creek	236.13	0.70						1.1 to 7.4		Slight obstruction.
Natural pool	236.83	0.40						0.7 to 5.1		Do.
Hartsville Bar	237.23	0.19						2.4 to 7.4		Do.
Natural pool	237.42	2.07						3.0 to 26.9		Do.
Hartsville Island	239.49	0.51						4.5 to 6.5		Do.
Natural pool	240.00	2.65						0.9 to 23.1		Do.
White's Bar	242.65	0.25						3.4 to 6.5		Do.
Natural pool	242.9	1.72						1.4 to 15.9		Do.
Mill's Island	244.62	0.30						2.9 to 10.9		Do.
Natural pool	244.92	1.25						2.9 to 12.4		Do.
Second Creek Island	246.17	0.82						2.1 to 9.8		Do.
Natural pool	246.99	0.85						5.0 to 39.9		Do.
Whiteley's Rock Island	247.84	0.53						0.7 to 6.2		Ripple at head of channel.
Natural pool	248.37	0.79						1.4 to 26.4		
Burdine's Island	249.16	0.59						0.7 to 11.0		Ripple at head.
Natural pool	249.75	0.17						3.6 to 12.4		
Samson Shoal	249.92	0.65						1.4 to 5.3		Slight obstruction.
Natural pool	250.57	1.34						3.8 to 29.4		Do.
Cedar Creek Towhead	251.91	0.99						1.4 to 7.3		Do.
Natural pool	252.90	2.25						3,044.4		Do.
Rocky Creek or Buzzard Island	225.15	0.78						2.5 to 9.0		Do.
Natural pool	255.93	5.36						1.4 to 25.4		Do.
Belote's Bar	261.29	0.98						1.1 to 7.0		Do.
Natural pool	262.27	1.23						2.6 to 19.4		Do.
Spring Creek Bar	263.50	0.26						1.7 to 9.2		Do.
Natural pool	263.76	1.64						2.7 to 25.9		Do.
Big Timber Island	265.4	1.13						1.2 to 8.4		Do.
Natural pool	266.53	0.68						6.8 to 24.4		Do.
Bledsoe's Bar	267.21	0.33						1.3 to 4.4		Do.
Natural pool	268.65	0.54						13.3 to 19.4		Do.
Bledsoe's Island	268.08	0.57						1.7 to 8.3		Do.
Natural pool	268.65	0.97						2.0 to 23.4		Do.
Cairo Island	269.62	0.43						4.2 to 8.6		Do.
Natural pool	270.05	4.63						2.3 to 36.4		Do.
Double Island	274.68	1.34						1.4 to 8.7		Do.
Natural pool										Do.

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Table giving the facts, &c.—Continued.

Locality between Point Burnside and Nashville.	Distance from Point Burnside.	Length of each shoal and pool in succession.	Descent of the river.				Depth of low water.	Difference of level from Point Burnside.	Remarks.
			Fall of each shoal and pool.		Maximum fall in a given distance.				
			Total.	Average per mile.	Feet fall and distance.	Corresponding rate per mile.			
	Miles.	*Miles.*	*Feet.*	*Feet.*	*Feet. Distance.*	*Feet.*	*Feet.*	*Feet.*	
Gallatin Island	277.63	0.38					2.0 to 5.7		Slight obstruction.
Natural pool	278.01	6.93					0.5 to 35.9		Do.
Cooper's Island	284.94	0.43					7.1 to 11.1		Ripple at head.
Natural pool	285.36	4.38					3.2 to 17.9		
Lindsay's Island	289.64	0.82	3.324	4.05	0.998 in 370	14.25	1.7 to 5.2		Rock and gravel.
Natural pool	290.46	5.48					0.9 to 13.4		No serious obstruction.
Jones's Island	295.94	1.69					0.9 to 8.9		Do.
Natural pool	297.63	3.77					1.5 to 12.4		Do.
Mancoe Island	301.40	0.51					1.0 to 5.9		Do.
Natural pool	301.91	3.82					2.0 to 13.4		Do.
Hill's Island	305.73	0.89					0.9 to 5.4		Do.
Natural pool	306.62	1.13					2.4 to 11.0		Do.
Donelson's Horse-ford	307.75	0.92	3.048	3.283	0.534 in 300	9.40	0.9 to 6.1		Gravel and dam.
Natural pool	308.67	1.12					1.3 to 5.4		
Martin's Ripple	309.79						0.5 to 1.7		Narrow rock-ledge. No serious obstruction.
Natural pool		0.86							
Beck's Ripple	314.18	5.18					0.7 to 6.1		Short gravel-bar.
Natural pool	315.04						2.0 to 13.9		
Preastley's Shoal	320.22	0.38					1.1 to 3.0		
Upper Nashville Island	323.63	0.76					1.1 to 8.4		Short dam and dredging.
Natural pool	324.39	2.32					1.6 to 10.1		
Nashville	326.71						1.6 to 10.1	232.0	

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The method which I would recommend for improving this portion is the same as for the lower river. That is to excavate the bars and rock ledges to get an additional depth of water; to contract the water-way in places to get the requisite depth, to remove snags and bowlders from the main channel and to restrain tributary streams in well-determined channels at their junction with the river. It would probably increase the depth of water in the lower stages from 8 inches to about 3 feet.

The probable cost of this method of improvement is given in detail in the following table, in which the first division is divided into two sections and the second division into nine, for the purpose of bringing the practical execution of the work within the means of practical business men.

Localities of proposed improvements from Laurel River to Nashville.

Locality.	Cubic yards of dam at $2 per yard.	Cubic yards of rock excavation at $3 per yard.	Cubic yards of dredging at 75 cents per yard.	Snags, logs, and trees by the job.	Cost of work at each locality.	Aggregate by sections and the total.
Division No. 1.						
Sec. 1. From Laurel River to Smith Shoals	.....	2,000	.....	.....	$6,000	
Smith Shoals, Shadowen Shoal	.....	1,000	.....	.....	3,000	
Smith Shoals, White Cliff Ripple	500	2,000	.....	.....	7,000	
						$16,000
Sec. 2. Smith Shoals, Long Shoals	2,500	2,500	.....	.....	12,500	
Smith Shoals, Short Shoal	2,500	2,500	.....	.....	12,500	
						25,000
Division No. 2.						
Sec. 1. From South Fork to Fishing Creek	.....	.....	.....	400	400	
Near and at Forbush Bar	7,000	340	.....	.....	15,020	
						15,420
Sec. 2. From Gan's Island to Harmon's Shoal	6,000	500	.....	500	14,000	
Wolf or Lilly Island	3,000	1,000	1,000	.....	9,750	
Belk's Island	600	400	.....	.....	2,400	
Belk's Island to Wild Goose Shoal	.....	.....	.....	200	200	
						26,350
Sec. 3. Wild Goose Shoal	2,666	5,883	600	.....	23,431	
Poplar Mountain Creek	.....	500	400	.....	1,800	
Long Bottom Shoal and Island	.....	.....	400	.....	300	
Black Fish Bar	.....	.....	400	.....	300	
Mettie Miller Rock	.....	60	.....	.....	180	
Campbell's Island	.....	.....	600	200	650	
Snow Island	.....	.....	600	100	550	
Self Shoal	.....	.....	400	.....	300	
Crocus Creek Bar	.....	.....	600	100	550	
Bakerton Bar	.....	.....	1,000	100	850	
Rennix and Short Bar	.....	.....	1,000	.....	750	
						29,661
Sec. 4. Walton's Shoals	1,000	.....	4,000	.....	5,000	
Champ Shoals	.....	400	.....	.....	1,200	
Wilbur Island	400	400	2,000	.....	3,500	
Cloyd's Island	.....	.....	.....	200	200	
Mud Camp Bar	.....	.....	600	.....	450	
Stallcup's Island	.....	.....	300	.....	225	
Bickerstaff's Bar	.....	.....	400	.....	300	
Richardson's Upper and Lower Ripple	.....	200	100	.....	675	
Simms's Shoal	.....	100	.....	.....	300	
Shut-in Shoal	.....	2,000	1,000	.....	675	
Celina Bar	.....	.....	1,000	500	1,250	
Turkey Creek Island	500	.....	600	200	1,650	
						21,500
Sec. 5. Brimstone Island	4,200	.....	3,000	.....	10,650	
Kirkpatrick's Bar	.....	200	.....	.....	600	
Scantlin Island	2,600	1,400	6,000	.....	13,900	
						25,150
Sec. 6. Simpson's Island	1,000	500	6,000	200	8,200	
Cub Creek	3,000	400	5,000	.....	10,950	
						19,150

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Localities of proposed improvements from Laurel River to Nashville—Continued.

Locality.	Cubic yards of dam at $2 per yard.	Cubic yards of rock excavation at $3 per yard.	Cubic yards of dredging at 75 cents per yard.	Snags, logs, and trees by the job.	Cost of work at each location.	Aggregate by sections and the total.
Sec. 7. Holliman Island	1,000	200	5,000	.....	$6,350	
Indian Creek	400	600	10,000	500	10,600	
						$16,950
Sec. 8. Sand Shoals	3,000	5,000	1,000	.....	21,750	21,750
Sec. 9. Bartlett's Bar	2,000	.....	4,000	200	7,200	
Lindsay's Island	.....	800	400	.....	2,700	
Donelson's Horse-ford	1,000	.....	4,000	.....	5,000	
Upper Nashville Island	1,000	.....	2,000	.....	3,500	
						18,400
Total	45,886	30,883	63,400	3,400	.....	235,331

The estimated cost of the work is therefore $235,331, to which there should be added ten per cent. ($23,535 10) for superintendence. This would make the total cost $258,864 10. This sum could be profitably expended in two working seasons, and I therefore recommend that the sum of $130,000 be appropriated for this work for the fiscal year ending June 30, 1873.

From the statements of productive capacity and mineral wealth of the country through which this portion of the river flows, given in my last year's report, the necessity of this improvement will be seen. In consequence of the great difficulty of building railroads to the greater part of the upper river, it must be for many years the principal outlet for the produce of a large part of Kentucky and Tennessee, and these facts would really necessitate the more radical improvement by means of locks and dams. But this method would cost about $4,000,000, and as there seems to be no hope that such a sum could be at present appropriated I have thought it proper not to recommend it.

The drawings to illustrate this report are in course of preparation and will be transmitted as soon as they are completed.

Very respectfully, your obedient servant.

G. WEITZEL,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

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42D CONGRESS, 2d Session. SENATE. Ex. Doc. No. 49.

LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In obedience to law, statements of the expenditures at the Springfield armory, and of the munitions of war manufactured, altered, and repaired thereat during the fiscal year ending June 30, 1871.

MARCH 11, 1872.—Referred to the Committee on Military Affairs and ordered to be printed.

WAR DEPARTMENT,
March 9, 1872.

The Secretary of War has the honor, in compliance with the requirements of the fifth section of the act of April 2, 1794, providing for the repair, &c., of United States arsenals and magazines, to transmit to the United States Senate and House of Representatives, herewith, duplicate statements of the expenditures at the Springfield armory and of the munitions of war manufactured, altered, and repaired thereat during the fiscal year ending June 30, 1871; no other armory belonging to the Government having been engaged in such work during that period.

WM. W. BELKNAP,
Secretary of War.

Statement of expenditures at the Springfield armory and of the arms, components of arms, and appendages fabricated, altered, and repaired thereat during the year ended June 30, 1871, *in pursuance of the act of Congress of April* 2, 1794.

EXPENDITURES.

Appropriations.

National armories	$56,847 46
Repairs, &c., at Springfield armory	9,232 54
Arming and equipping militia	426,332 94
Ordnance service	7,277 89
Ordnance, ordnance stores, &c	108,158 74
Purchase of land	3,000 00
Total	610,849 57

WORK DONE.

6,717 Springfield breech-loading muskets, model of 1868, altered from muzzle-loaders.
1 Springfield breech-loading musket, model of 1866, altered from muzzle-loader.

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1,600 Joslyn breech-loading muskets, altered to center-fire.
50 Colt's Army revolvers, supplied with Locke's attachment.
150 cavalry sabers, nickel-plated.

Manufactured arms.

1,533 Springfield breech-loading cadet-muskets, model 1869.
1,021 Springfield breech-loading muskets, for trial.
341 Springfield breech-loading carbines, for trial.
1,008 Remington breech-loading muskets for trial.
313 Remington breech-loading carbines for trial.
1,001 Sharp's breech-loading muskets for trial.
308 Sharp's breech-loading carbines for trial.
3 Springfield breech-loading rifles, samples.
1 Remington breech-loading rifle, sample.
6 experimental muskets.
22,013 Remington Navy rifles.
1 Spencer rifle, altered from carbine.

Appendages.

34,680 tompions, cal. .50.
3,698 screw-drivers, altered for Remington Navy rifle.
1,025 screw-drivers, model 1866.
6,684 screw-drivers, combination.

Ammunition for small-arms.

108,400 metallic cartridges.

Components of arms.

Springfield breech-loading muskets, model 1866:
654 stocks.
3 stocks, first turned.
2,500 ramrod-stops.
10 rear-sight leaves.
3,568 thumb-piece screws.
761 hinge-pin rivets.
783 hinge-pin callets.
55 firing-pins.
862 firing-pin nuts.
1,418 ejector-springs.
500 ejector-spring cap-screws.
Sharp's breech-loading carbine:
1,361 main-springs.
2,100 stirrups.
108 lever-springs.
73 barrel-studs.
46 tip-stock screws.
322 lever-spring screws.
25 rear-sight base-pins.
Remington breech-loading carbine:
100 butt-stocks.
106 tip-stocks.
Springfield breech-loading carbine:
84 stocks.
Sharp's breech-loading musket, for trial:
148 butt-stocks.
62 tip-stocks.
Remington breech-loading musket, for trial:
67 tip-stocks.
Spencer carbine:
2,982 main-springs.
1,232 rear-sight bases.
1,604 rear-sight springs.
286 rear-sight leaves.
1,035 rear-sight slides.
897 rear-sight leaf-screws.
145 rear-sight joint-screws.
3,000 rear-sights.
504 button-screws.
502 cartridge guide-springs.
167 cartridge stop-pins.
2,562 shell drawer-springs.
2,520 shell drawer-spring screws.
1,000 buttons.
825 swivel bars.
850 swivel bar-screws.
780 swivels.
401 magazine-locks.
740 magazine inner-tubes.
1,024 button stop-screws.
250 butt-stocks.
247 band-springs.
Springfield breech-loading muskets, model 1868:
123 ramrod-stops.
275 stocks.
1,110 rear-sight bases.
1,335 rear-sight base-screws.
3,103 rear-sight leaves.
3,330 rear-sight leaf-screws.
3,080 rear-sight leaf-slides.
1,645 rear-sight joint-screws.
1,660 rear-sight springs.
42 rear-sights.
423 front-sights.
820 breech-screws.
9 barrels.
305 upper bands.
1,292 upper-band swivels.
1,667 upper-band swivel-screws.
5 lower bands.
526 band-springs.
140 mainspring swivels.

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250 hammers.
120 locks.
408 ramrods.
84 receivers.
502 breech-blocks.
1,396 breech-block cap-screws.
150 hinge-pins.
382 cam-latches.
2,081 cam-latch springs.
20 thumb-pieces.
3,119 firing-pins.
2,273 firing-pin screws.
4,005 firing-pin springs.
630 extractors.
2,481 ejector-springs.
290 ejector-spring spindles.
220 ejector-studs.

Remington Navy rifle:

598 barrels.
1,690 breech-blocks.
1,405 butt-stocks.
170 butt-plates.
588 butt-plate screws.
3,019 buttons.
4,144 button-screws.
1,870 upper bands.
2,057 lower bands.
1,200 band-springs.
260 band-swivels.
774 band-swivel screws.
3,085 extractors.
5,111 extractor-screws.
202 frames.
19,438 firing-pins.
35,621 firing-pin springs.
12,156 firing-pin screws.
93 guards.
262 guard-swivels.
262 guard-swivel pins.
1,935 hammers.
2,857 hammer and breech-block pins.
2,027 levers.
1,946 lever-pins.
12,516 lever-springs.
9,214 lever-spring screws.
12,492 main-springs.
12,636 main-spring screws.
262 main-spring stop-pins.
3,216 main-spring friction-rolls.
2,340 main-spring friction-roll pins.
1,201 ramrods.
600 ramrod stops, upper.
1,481 ramrod stops, lower.
150 rear-sights.
149 rear-sight base-screws.
124 rear-sight leaf-screws.
124 rear-sight joint-screws.
2,356 recoil studs.
3,014 recoil-stud screws.
2,425 recoil-stud dowel-pins.
2,158 side-screws.
2,040 triggers.
1,989 trigger-pins.
12,621 trigger-springs.
3,419 trigger-spring screws.
2,665 tang-screws.
1,440 tips.
1,564 tip-screws.
1,617 tip-stocks.

Miscellaneous:

504 trowel bayonets.
1,436 arm-chests.
60 boxes, packing.

Repaired.

90,822 muskets, rifles, and carbines.
305 Colt's revolving pistols.

A. B. DYER,
Chief of Ordnance, United States Army.

ORDNANCE OFFICE, WAR DEPARTMENT,
January 5, 1872.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 50.

LETTER

FROM

THE SECRETARY OF THE NAVY,

COMMUNICATING,

In compliance with a resolution of the Senate of March 13, 1871, further information in relation to proposals for establishing iron-ship building-yards and docks.

MARCH 12, 1872.—Referred to the Committee on Naval Affairs and ordered to be printed.

NAVY DEPARTMENT, *March* 4, 1872.

SIR: On the 13th of March last the Senate adopted the following resolution:

That the Secretary of the Navy be directed to communicate to the Senate such proposals, if any, as may have been made to him for establishing iron-ship building-yards and docks, to economize expenditure in the Navy, and to aid in restoring commerce, with such explanations, suggestions, and recommendations as he may deem advantageous to the Government, in connection with that subject.

In part reply to this resolution, I had the honor to place before the Senate, on the 14th of April, the only proposals of this character which had then been received, and to state what seemed to be their advantages. That communication will be found in Executive Document No. 10, first session, Forty-second Congress. Its closing sentence is:

I will hereafter endeavor to suggest, in obedience to your resolution, some system, to be perfected under your deliberations, for the establishment of lines of ocean steamers, adapted, as far as may be, for commerce in time of peace, and for a naval militia in time of war.

In further compliance with this resolution, I now have the honor to place before Congress such facts, "explanations, suggestions, and recommendations" as I have been enabled to gather upon the subject of restoring our foreign commerce, as far as may be, to an advanced position relatively to the commerce of other nations.

THE DECLINE OF OUR SHIP-BUILDING AND THE METHODS OF RECOVERING IT.

The acquisition of California stimulated a demand for quicker sailing qualities than had been before known upon the ocean. The talents of our ship-builders at once supplied these qualities in the forms of American clipper-ships, which for speed and sea qualities are yet unequaled by any foreign-built vessels. It was the success of these clipper-ships which stimulated the building of screw-vessels, which, by a constant though slower rate, might accomplish their voyages with more regularity in time.

In Great Britain ship-timber had become so scarce and reached so

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high a value as to induce the making of experiments with iron, in the hope that it would supply, in the structure and use of ships, a substitute more economical and more durable. The experiments have been successful, and have met the growing necessity of their case. Timber with us was and is abundant, and its price comparatively low. While it continued the material for ships, the advantage was with us. But the successful introduction of iron has been to us a temporary reverse, not because of our inability to apply it with equal success to ocean purposes, but because we were engaged at the time in the more important and imperative duty of sustaining the life and unity of the nation. These secured, we now have time to take advantage of the improvements which science and art have introduced into the means of ocean transportation, and with the advantage of learning by the experience and utilizing the results of others, we can now make our advance more rapid, less costly in outlay, and more remunerative in returns.

THE FIRST NECESSITY—TO BUILD GOOD SHIPS.

The first necessity at this time is the production of ships equal or superior, if possible, to those now engaged in ocean service. To admit an incapacity on our part to produce these under equally favorable circumstances would be to cast unmerited discredit upon American mechanics, whose intelligence and industry have been evidenced in all arts, and in none more than in the art of ship-building.

Under any adequate and sustained system of encouragement, steamers of reliable strength, as beautiful in form, as perfect in sea qualities and relative speed as were our clipper-ships, would be produced *as rapidly as proper and profitable routes could be determined upon*, and thus the first movement for the restoration of commerce under our own flag would be securely made.

The great commercial successes of nations have always been secured by government encouragement in some form, and our own earlier successes are the best illustration of the principle.

Our political fathers, realizing the value of our extended Atlantic coast line, indented with noble harbors, and looking to the development of its advantages and to the prosperity of the great commercial communities which were to grow up thereon, and understanding the direct and collateral advantages to be derived, in peace and war, from establishing and fostering the art of ship-building, as one development of the resources and abilities of our people, gave to this art the fullest protection by a total exclusion of foreign ships from our flag.

The simple facts that, in the period from the adoption of these laws to 1861, we exceeded other nations in the speed and sea qualities of ships, and that our commerce increased with unprecedented rapidity, are evidence of the wisdom of these laws.

The introduction of new materials and modes of propulsion—at a time when higer duties than those of extending trade occupied our attention—and the temporary precedence over us gained by others, should not be counted reasons for discouragement, but incentives to action; that we may regain our place in the first rank, and make our flag once more an assurance of excellence in the ships over which it is displayed.

Our first endeavor, then, should be to stimulate the building, in our own waters, by our own workmen, of the ships which are necessary to establish our commerce, but which a wise policy forbids us to procure abroad. To this end we must first of all determine upon and provide the means of accomplishing this as cheaply as possible. The first step

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in this direction seems to be the creation of large and commodious building-yards, advantageously situated with reference to the ready and cheap supply of the great bulk of the necessary material, and so arranged as to unite in one establishment all the means and appliances required to convert this material, through all its necessary processes and applications, into ships, under one organized system, single, direct, and harmonious from the inception, and involving but one profit to the producer. Such establishments, of course, cannot be produced without some action on the part of the Government to encourage the necessary aggregation of capital and to secure its results to some extent, in return for the national enterprise in which it is embarked.

If, in addition to any aid given in this direction, Congress should also be willing, in order further to encourage the development and employment of our own resources, to give, for a limited term of years, a general return or bounty to the American ship-builder and owner, upon the *American* materials and articles used in the construction and outfit of ships, of an amount equal to the duties upon like materials and articles if imported, it is obvious that a great impulse would be given to the manufacture and use of each article required, since if these duties now amount to prohibition on the use of foreign materials and articles, their amount would be a liberal measure of the encouragement necessary to put the American producer on an equality with his foreign competitor.

THE NEXT NECESSITY—THE ESTABLISHMENT OF PROPER ROUTES.

But though the building of good ships is the first necessity, it is by no means all. The mere building and possession of ships will not re-establish commerce. Their use must be properly directed and encouraged, upon some consistent system in harmony with the laws of trade, and upon fixed routes selected with reference to the use and development of our home resources, and the opening, appropriating, and securing of the most desirable foreign markets and sources of supply. These principles, if not evident, are readily illustrated.

Within the limits of our country are embraced nearly all the productions which minister to the necessities of the human race; the internal exchange of these products, when measured by a money value, reaches a sum far greater than the foreign commerce of several of the largest maritime nations, if concentrated, would amount to. But domestic trade cannot alone give power and greatness to a nation. If it could, China would now be at the head of civilization.

The simple exchange of one product for another adds little to national riches; but the convenience which such an exchange affords permits of divisions of labor, which divisions, if pursued, produce greater perfection in each art, and a consequent reduction in cost, thus affecting national wealth by an accumulation of profit, and influencing individual comfort and happiness by greater facilities of obtaining not only the necessaries but the luxuries of life.

It is by a continued devotion to these simple principles, by a constant dividing and subdividing of the kinds of labor required in the pursuit of agriculture, mechanic arts, and manufactures, that their products are reduced in cost to form profitable articles of exchange, and that one nation exceeds another, in development and wealth, in proportion to the advantage gained by such improvements.

By the devotion which England in this manner has given to manufactures and the mechanic arts, especially to those of manufacturing fabrics and to the art of ship-building, she has risen to that commanding posi-

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tion in the world's affairs that nations, depending on home trade only, can never attain. One of England's ablest writers (Mill's Commerce Defended, p. 38) says:

> The commerce of one country with another is merely an extension of that division of labor by which so many benefits are conferred upon the human race, as the same country is rendered richer by the trade of one province with another, as its labor becomes thus infinitely more productive than it could otherwise have been; and as the mutual supply to each other of all the accommodations which one province has and another wants, multiplies the accommodations of the whole and the country becomes thus, in a wonderful degree, more opulent and happy, the same beautiful train of consequences is observable in the world at large, that great empire of which the kingdoms and tribes of men may be regarded as the provinces. In this magnificent empire, too, one province is favorable to the production of one species of accommodation and another province to another; by their mutual intercourse they are enabled to sort and distribute their labor as most peculiarly suits the genius of each spot. The labor of the human race thus becomes much more productive, and every species of accommodation is afforded in much greater abundance. The same number of laborers whose efforts might have been expended in producing a very insignificant quantity of home-made luxuries, may thus produce a quantity of articles for exportation accommodated to the wants of other places, and which will purchase in return an accumulation of the luxuries of every quarter of the globe.

The influence of foreign commerce is to add immensely to the convenience and happiness of the working classes and to create new sources of enjoyment to the opulent. It multiplies and cheapens the articles of necessity and of luxury, and thus reduces and equalizes the value of labor, while it affords to the laborer a larger return in all the enjoyments of life than he can acquire by high wages and a consequent scarcity of production with enhanced prices. It brings nation after nation into more intimate relations and knowledge of the others' arts, institutions, and people; stimulates enterprise and invention; and tends to establish on firmer foundations the harmonies and blessings of peace.

It appears an order in creation that one country should have in abundance that with which another is scantily or not at all supplied, that their mutual relationship and dependence should the sooner and more permanently be established by communication over ocean highways.

The United States, beyond any country, seem fitted by Providence to sustain a commerce in this manner with other nations. Producing, in excess of domestic wants, cotton, timber, wheat, corn, coal, ores of iron, copper, lead, zinc, silver, and gold, they can, from these natural resources, with slight exertion, secure profitable commercial relations with the world. And to these great natural products are added those of the mechanic arts, of labor-saving machinery, now in demand not only in all civilized, but in most of the semi-civilized and even barbarous countries; manufactures of cotton, of wool, of silks, of wines and spirits, in each of which, if proper encouragement is given, they can compete in foreign markets to advantage with the oldest and most advanced of foreign nations.

No proposition of economic science is better established than that the complete development of the mechanical industries of the country is as dependent upon foreign markets as the productions of agriculture itself. When the cost of either is increased by any cause beyond the cost of production in other countries, the markets of the world are closed against us on the simple ground that we are underbidden in all those countries to which they have access and we have not.

Cheap transportation is an element of cheap production. On this principle we have reclaimed the great valleys of the Mississippi and Missouri Rivers, and filled all our mountain regions with hardy workmen. And by insuring rapid and cheap transportation for our products,

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we help our national ingenuity and industry, without reducing their home value, to a fair footing to compete in the markets of the world.

The relation of transportation and production is illustrated in England with peculiar force in respect to its domestic industries and foreign commerce.

Upon cotton, one of the surplus products of our agriculture, a great portion of the commerce of Great Britain rests; and in its manufacture lies one of the chief sources of employment in that country, embracing, in this one division of labor, not less than one million two hundred thousand of her people. It has, too, built up nearly every other mechanic art, and caused the increase of her ocean commerce to the exclusion of our own. It may, therefore, be advantageous to briefly note the progress of England's cotton manufacture, its direct connection with her imports and exports, and the rise therewith of her lines of steamships.

But little more than a century has elapsed since the weaving of cotton was commenced in England, and down to 1773 an entire cotton fabric had not been made; the weft or transverse threads of the web only were of cotton; the warps or longitudinal threads were of linen yarn, imported from Germany and Ireland. The weavers were dispersed in cottages throughout the country; furnished themselves with the warp and weft, and, when woven, carried them to market. Up to 1791 her entire supplies of raw cotton were derived from the East Indies. In that year 189,655 pounds of cotton were received from the United States, (the first ever shipped,) and 28,517,020 pounds from India. In the same year the total imports and exports of Great Britain, of all descriptions, were—

Imports	$95, 347, 887
And exports	110, 248, 762
Making a total foreign commerce of	205, 596, 649

In 1798 her imports of cotton were 31,880,641 pounds.

Her imports of all descriptions	$135, 110, 762
Her exports of all descriptions	162, 920, 124
Making a total foreign commerce of	298, 030, 886

In 1818 her imports of cotton were 177,382,138 pounds.

Her imports of all descriptions	$173, 849, 899
And exports of all kinds	256, 062, 322
Making a total commerce of	429, 912, 221

In 1838, the advent of transatlantic steamships—

The imports of cotton were 507,850,577 pounds.	
And the total imports of all kinds	$290, 412, 690
The exports and re-exports	508, 331, 207
Making a total foreign commerce of	798, 743, 897

The impulse which the various lines of ocean steamers gave had increased her manufactures so rapidly that in ten years thereafter, that is, in 1848, her imports of cotton were 713,020,161 pounds. Of this 600,247,488 pounds came from the United States, and only 112,172,673 pounds from all other sources.

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Her imports of all descriptions reached	$453,588,100
And her exports	732,300,794
Making a total foreign commerce of	1,185,888,894

In 1858 her imports of cotton were, from the United States	1,115,890,608	pounds.
From all other sources	275,048,144	pounds.
Making a total import of cotton	1,390,938,752	pounds.

The suspension of our exports of cotton during the war was a calamity so great in England that it was and always will be known as "the cotton famine." The greatest exertions were made by associations and by the government to create other sources of supply; but with the resumption of our cotton exports, one after another of these new sources have failed, from inability to compete in quality and price, and by this restored aid from us in the reproduction of our cotton, the total foreign commerce of Great Britain amounted, in the year 1869, to $2,854,506,479, and, according to the latest published statement, has reached in the present fiscal year the enormous sum of $2,910,000,000.

The aggregate of the world's commerce for the last fiscal year has been estimated at $9,237,000,000. It is thus seen that Great Britain enjoys about *one-third* in amount of these vast transactions, and that her commerce has grown with her importation from us of cotton, and its manufacture and extension of sale, through the means of rapid and cheap intercourse created by the establishment of steamship lines upon routes which connected her main out-ports with the chief commercial cities of the world. The aid of every governmental interest and the influence of every governmental department was directed to the same great end.

The experiment of using steamers for mail service was made by the British post-office as early as 1821, from Holyhead to Ireland and from Dover to France, but it was not until 1833 that contracts were made with individuals or companies for other services. In 1837 the first line to the Mediterranean was formed. In 1838 transatlantic steam communication was demonstrated, and established under contract with Cunard in the following year. In 1843 the East India and other lines were established, and so on to others. In 1854 the system was deemed nearly perfect. There had then been created fifteen different lines, (ostensibly for mail purposes, but which really girdled the world with a commercial belt,) requiring at the commencement 118 steamers, having an aggregate of upward of 140,000 tons, and navigated by 8,137 mariners. The routes were so well chosen that the number of steamers on nearly all have been doubled to meet the demands of commerce. These steamers have been built under inspection to suit them for naval purposes if required; and in the Crimean and East Indian wars they were called upon, and performed most efficient naval service.

In expression of this policy it was declared as a principle, by the British government, that the importance of an efficient system of ocean steam communication was not to be measured by the profit or loss which should directly attend it, but by the commercial prosperity and defensive power it would give the nation.

In an elaborate report of a treasury committee of Parliament it was declared "unreasonable to expect that any person or association of persons should incur the expense and risk of building steamers, forming costly establishments, and opening new lines of communication at heavy outlay of capital, without some security or aid from the government." In this spirit England made the contracts before referred to, at a yearly

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expenditure for the service of $5,158,316, and has paid since then, in the aggregate, to sustain it, the sum of $96,720,940. Large as this outlay has been, the wisdom which inaugurated and continued the policy has been demonstrated by its wonderful success. When her manufacturing policy commenced, in 1791, her total commerce was but $205,596,649. It had been increased, at the time steamships assumed an important feature in its further progress, in 1838, to the amount of $798,743,897; and by the successful subdivisions of labor in manufactures, and the extension of commercial markets made by these steamship lines, it has reached at the close of, and for the last fiscal year, the sum of nearly $3,000,000,000.

The career of England is thus briefly alluded to, because, to a certain extent, ours must necessarily be similar in its progress. We manufacture the same description of cotton and woolen fabrics, the same kinds and many additional kinds of labor-saving machinery. We have inexhaustible supplies of superior coal and of metallic ores; each and all of which can be brought to the prepared condition for sale at a cost regularly lessening as the price of labor is becoming nearer equalized in the two countries. There is now a rapid tendency to this equality. The price of labor is augmenting in Europe, while it is somewhat decreasing with us, and will continue to decrease as new railroads bring new lands into profitable production, and cheap and safe transportation on our interior waters shall reduce and equalize the cost of the necessaries of life.

The aggregate of our foreign commerce for the year 1870 was $962,469,730. The aggregate of that of England in 1838, the period of commencing steam enterprise, was $798,743,897. At that period England had all her elements of commerce ready, but required more rapid means of reaching and creating markets to make them a source of national wealth; such is now our position.

We are more than one hundred and sixty-three millions of dollars by developed commerce in advance of what England was in 1838. We are proportionally much more in advance of what she was at that period in manufactures and arts, but we are in her position at that time in regard to markets, and the means of reaching them. She had recourse to the building of steamships, and to the encouragement of her people in the formation of lines of steamers to distant foreign ports; but her co-ordinate departments of the government, the admiralty, the post-office, and the board of trade, laid out and formed such routes and fixed upon such ports as seemed adapted to the objects sought. Parliament would not be confused by, nor have its time wasted upon, the discussion of fruitless and visionary schemes, but the well-digested plans of the departments were approved, and government aid to the extent of, as already stated, $96,720,940, has been paid in the complete establishment of her commercial and mail lines of steamships, not from a single port, but from the main out-ports of the country.

ROUTES SHOULD BE SELECTED WITH REFERENCE TO OUR PRODUCTIONS AND THEIR APPROPRIATE MARKETS.

In view of these reflections, it is respectfully suggested whether we may not, by some well-considered plan, establish, in aid of our industries, lines of ocean steam communication which will place American-built steamships upon leading commercial routes, making our Atlantic and our main Pacific ports the termini of such lines as shall be best adapted to develop the trade of the country which lies behind them.

In the formation of ocean steamship routes, not only the present but

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future requirements of commerce should be well considered. Great steaming distance on any route should be guarded against by providing places of supply and coaling-stations. Where favorably located, such stations might become centers of exchange, from which commerce would extend to our advantage, if depots for the reception and distribution of our products and manufactures should be secured by leases or treaty stipulations. Other steamship lines could there connect, to interchange their mails, passengers, and cargoes, thus shortening the length of run, and making, with fewer steamers and less costly outlay, a more perfect circle, and more frequent and profitable voyages. By such facilities the manufactures and products gathered at each of our home ports could reach diversified and greater markets.

Should free ports be selected as the interchanging depots or stations, a concentration thereat of our products, and of the foreign products to be received in exchange, would naturally result. What we had sent, and that which was to come thence to us, would be borne by a single and cheaper means; the profits of the carriage in each case resulting to us, and the duties to be collected on the imports or return cargoes would probably repay the amount of outlay by the Government in any scheme which may be adopted. In this manner commerce, divested of many of its burdens, would yield none the less to the revenues of the country, while its lessened cost would rapidly increase the national wealth. By this plan, for illustration, a single depot in the Mediterranean might place any one of the Atlantic cities in direct connection and exchange with the ports of Spain, the south of France, Italy, Austria, Turkey, Morocco, Tunis, Tripoli, Egypt, Arabia, Persia, and nearly all the East Indies.

Another favorably located depot in the West Indies would serve as a receiving and distributing point for exchanges with each of the islands of the Caribbean sea, (or West Indies,) as well as for Colombia, Venezuela, Guiana, Brazil, Uruguay, and the Argentine Republic. To this one central depot any or all of our Atlantic cities could establish steam lines which, besides placing any one or more of these cities in connection with the others in coast-line voyages, would enable each to participate in the direct commerce of the West India Islands and the whole east coast of South America.

Another depot properly located on the American Isthmus would, if these cities extended the voyages of their same steamers thereto, place each city in almost direct trade with the west coast of South America, the west coast of North America, and the islands of the Pacific Ocean.

PIONEER ROUTES.

Looking to the future needs of the country, I think it proper in this connection to suggest the chief lines of steam communication which seem to me may gradually be established, and which seem necessary to give full scope to our varied industries. There must be a limit to our productions of every kind if we fail to open to them the markets of the world. Our geographical position, by which we command access to the two great oceans, and to the populations of both Europe and Asia, with intercontinental railway transits, enables us, by the use of means at our disposal, to increase the markets for our surplus productions almost without limit.

These chief lines are set forth in their order and connection in the appendix, and they may be brought into service as our industrial resources expand from the initiation of the system by lines of present

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necessity. This present necessity imperatively demands, I think, the immediate creation of the following lines, to rescue and protect our American interests:

The Mexican Gulf line; in the appendix, No. 1.

The Pacific Island line; in the appendix, No. 7.

The Queenstown and Liverpool line; in the appendix, No. 8.

The Galway and Glasgow line; in the appendix, No. 9.

The Southampton, Vlissingen and Antwerp line; in the appendix, No. 10.

The Lisbon, Cadiz and Gibraltar line; in appendix, No. 14.

These form part only of a general system of commerce which would encircle the world, and to the development of which system their establishment is necessary.

This general system I have referred to and set forth as a whole in the appendix hereto attached, numbering the lines necessary to complete it from Nos. 1 to 17 inclusive. Of these the main lines above referred to are Nos. 1, 7, 8, 9, 10, and 14, respectively, and to them the others are mainly tributary. By reference to the appendix, the ports which these lines will embrace, as also the ports which a general system growing out of these will include in their several routes, together with details of exports and imports of each, so far as can be obtained, will be found. The information is more in detail as relates to the South of Europe and the East Indies, because I have thought it likely to be more serviceable in enabling Congress to review our commercial relations with those interesting countries in connection with the subject-matter of this inquiry.

OUR PACIFIC INTERESTS.

Those lines which our people have already established should of course be included in any system, and should be fostered to the extent necessary to sustain them and to extend their accommodations to meet the growing wants of the commerce which they open.

Our interests on the Pacific coast are growing every year more and more important and diversified. They embrace already nearly every form and variety of production, so that even now they include all the elements necessary to constitute a great agricultural, manufacturing, and commercial nation. This most wonderful achievement of modern progress has found expression in the establishment of steam lines across the Pacific ocean, and of coast lines from San Francisco to the north and south. It is impossible not to see that a people so orderly, energetic, and powerful will, at an early day, require and must have largely increased facilities of ocean steam transportation. Nor can we overestimate the great importance and value to them and to us of their future commercial intercourse with the people of the East.

The relaxation of the ancient non-intercourse policy of these peoples, deep-seated in theocratic notions of government, I attribute in some degree to the industrial achievements of our people on the Pacific side of the continent.

These interesting events, which have marked a distinctive era in our history, have fairly won the good offices of the Government to promote the well-doing of a people who have added so much to the national wealth and honor. Their commercial needs are, in their nature, of an imperious character. United to the older communities of the nation at best by exceptional means of transit, the Pacific States are thrown back upon their own resources, and upon such relief as may be found in their trade with the Indies. Their productions, increasing from day to day,

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have forced the opening of new markets across an ocean twice as broad as the Atlantic. If the past is permitted to speak for the future, the extent of that trade, properly fostered, within the next half century can hardly be estimated.

In submitting these "explanations and suggestions," I have thought it due to our people on the other side of the continent to submit also these reflections upon their peculiar condition and claims upon the consideration of Congress in the matter of providing ways of ocean steam transportation in connection with any general scheme of relief which may be adopted.

THE ROUTES, ONCE ADOPTED, MUST BE SUSTAINED ON SOME FIXED SYSTEM.

Having adopted and designated the routes by which it is most desirable to open our commerce, the Government should extend its aid to establish and maintain them upon some fixed plan, well considered in the light of the world's experience, well guarded in respect of the interest and security of the Government, but sufficiently liberal to insure ultimate success.

The unparalleled success of England is the result of combined systems of encouragement, given in various forms, but all directed to the one great object of monopolizing for her products the markets of the world. In the early growth of her manufactures ample protection was given them by duties upon all foreign competing articles; and then, to stimulate an export of these manufactures, and produce a greater demand for home labor, bounties were paid upon the exports, in some instances exceeding the protection rates, that competition should be overcome to her advantage in the markets to be secured. This system and its marked success deserves the thoughtful attention of our own statesmen.

But I have already said that transportation is an element of production; a most important one in a country so rich as ours in natural products, but so vast in extent and so far separated from the consuming markets of the world. Thus, efficient and consistent aid to ocean transportation is bounty to exports.

It would be presumptuous in me to suggest the exact direction in which this aid should be given, or to what amount, or under what safeguards; but, to be efficient, it must, I think, be directed to all the objects I have mentioned, and be sufficiently liberal and stable to encourage the aggregation, and, to some extent, secure the safety of the large capital which must be embarked by individuals, not only in the production of ships, but in the establishment and maintenance of the regular lines.

It has been more from want of consolidated capital in the large sums necessary to create steamship lines than the want of enterprise in our people that our ocean commerce has been retarded, and this difficulty must be overcome before positive success can be insured. While capital is not easily found in large and consolidated sums for new enterprises, there is rarely a scarcity of it for safe investments. I know not how, otherwise than on some form of Government security, this can be secured in this direction at this time.

CONSISTENT WITH THE SPIRIT AND POWERS OF OUR GOVERNMENT.

I have endeavored to show generally how Government aid may be directed to the ultimate increase and advantage of our national wealth

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and power. It may certainly be given without violation of constitutional principle or Government policy.

To provide and protect the great means of commercial intercourse, both domestic and international, is one of the direct purposes of government, for which it is established and to which its resources may properly be directed.

Our object is the establishment of lines of ocean-going steamers, running out of our ports in the peaceful pursuits of commercial enterprise, and carrying our own products, but carrying also our own flag, and available to our Government in time of need.

Enterprises of such magnitude are, as I have said, inaugurated, established, and carried on only at great expense and risk of capital. But—important elements of the public wealth and prosperity—they are in their nature subject to the vicissitudes of public policy. They thus assume a national character, and are the proper subjects of Government aid and direction.

THE PARTICULAR FORM OF AID.

The form of aid suggested may be either by a direct advance of money or of Government bonds, or the guarantee by the United States of bonds of the companies to a fair amount of the capital required for each line. This last is urged as the best form of aid, as it would simplify, while it rendered it more effective, by giving a greater stimulant to each company to work out its own success; and with such a security and example, not only individuals, but States and municipalities to be directly benefited, will be encouraged to embark their money or their credit in these great national enterprises.

Analogous action has already been taken by the General and by State governments in aid of railroad enterprises of great national value. The accomplished success of these experiments, with such safeguards and securities as might be provided by law, would, it is claimed, secure the remaining complement of the necessary capital, as the enterprising citizens of each port to be benefited would soon select the route from those already designated by the Government which it would be to their advantage to occupy, and supply their portion of the capital necessary to establish and maintain it. In addition to this assistance, contracts should of course be given to our own ships to carry our own mails.

Should Congress adopt any such commercial system as is here suggested, the six lines mentioned as immediately necessary would require about thirty steamships to perform the service with promptness. They would probably cost from $15,000,000 to $20,000,000. The expenditure of this large amount would give employment and individual prosperity, not only to those engaged in ship-building, but to all others in incident mechanic arts, and would not, with all the great outlay in addition, necessary to the first establishment of routes, exceed the cost of a single year's American transportation paid by our people to foreign steamship lines.

It is not, however, my intention, in laying these facts and suggestions before you in compliance with your resolution, to do more than to direct attention to the point, for which we should strive rather than expect at once to reach, and to suggest the general action, which seems to me the most practical for its final attainment; and, if I have made any suggestions or given any information which is found to be of value, I shall be more than repaid.

I cannot, as I have before said, assume, even under the sanction of

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your resolution, to point out or recommend to what extent, or under what safeguards, the Government should afford its assistance to these objects mentioned.

This is wholly for the representatives of the people, with whom is the power and the responsibility.

I have the honor to be, very respectfully, your obedient servant,

GEO. M. ROBESON,
Secretary of the Navy.

Hon. SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

APPENDIX.

Showing the ports in the routes of the several steamship lines, the amount of trade in the aggregate of the countries, and, as far as practicable, the commerce and population of each port.

The ports of the West Indies, of Central and South America, are small but numerous. It would take up too much space to give the commerce of each of these in detail, and therefore the aggregate may be stated in advance.

The united export and import commerce of the West Indies, of Mexico, Central American States, Colombia, Venezuela, Argentine Republic, Uruguay, Peru, Bolivia, and Ecuador, according to the latest commercial returns, amount to $792,464,870.

The exports embrace all the tropical, semi-tropical, and temperate productions, with crude drugs; dye-stuffs; alpaca, vicuña, and sheep's wool; cotton; tobacco; coffee; cocoa; sugar; molasses; ores of copper, gold, and silver; caoutchouc; palm-oil; precious stones, pearls; guano; hides; chinchilla; skins, tallow, horns, bones; tapioca; various valuable barks; mahogany, rosewood, satinwood, ebony, and other ornamental cabinet-woods.

The imports take in nearly all the kinds of our agricultural productions, our entire range of manufactured goods, and machinery of every description.

The commerce has nearly doubled in the last ten years, and is capable of almost indefinite extension, if the facilities of rapid intercourse by steamers are supplied between the various ports.

The lines numbered 1, 2, 3, and 4 will reach nearly all this vast range of trade.

No. 1.—*The Mexican Gulf line* will embrace the ports of Havana, Aspinwall, Chiriqui, Blewfields, Pearl Cay Lagoon, Truxillo, Port Caballos, Omoa, Laguna de Terminos, Lagartas, Sisal, Campeachy, Larma, Tapilco, Alvarado, Vera Cruz, Tampico, and Matamoras.

No. 2.—*The Caribbean line.*—This line will take in all the available ports of the Caribbean Sea. Departing twice a month from a favorable free port in one of the islands eastward and southward to Porto Rico, Saint Thomas, Santa Cruz, Saint Christopher, Guadeloupe, Dominica, Martinique, Saint Lucia, Saint Vincent, Granada, and Trinidad, thence westward along the coast, touching at the ports of Cumana, Caracas, the island of Anacoa, Maricaibo, Rio Hache, Sabanillo, Carthagena, and Aspinwall, where it will connect with the steamers of the Mexican Gulf line, (No. 1,) placing thus all the ports and islands of the Caribbean

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Sea in direct connection with New Orleans, and also with the west coast of South America. From Aspinwall the steamers will proceed to Kingston, Jamaica, Santiago de Cuba, Port au Prince, Mole, Saint Christopher, Cape Haytien, and Samana, where they may connect with steamers to the ports of New Orleans, Savannah, Charleston, Norfolk, Baltimore, Philadelphia, New York, Boston, and Portland, if these cities establish such lines, and thus each one will have direct trade with the islands and east and west coast of South America, a trade which is practically worth more than the trade of Europe to this country, taking, as it will take, our manufactured goods in exchange for productions of those regions, which productions are equal to gold or silver in exchange with the ports of Europe.

No. 3.—*The East Coast South Atlantic line.*—This line would embrace the ports of Georgetown, Surinam, Cayenne, in Guiana, Para, Maranham, Paramahyba, Natal, Pernambuco, Bahia, Porto Seguro, Rio de Janeiro, Montevideo, and Buenos Ayres, and return by same route to the connecting port. Doubtless a business sufficiently large would be early developed to establish direct lines to some of these ports, such as Pernambuco, Rio de Janeiro, and Buenos Ayres, but, at the commencement, it is most desirable that all our Atlantic cities should participate in the trade, and this can only be accomplished economically by having one central port on the West Indies to which the Atlantic cities' commerce can converge, and from which their shipments shall find advantageous distribution.

No. 4.—*The West Coast South Pacific line.*—Commencing at Panama or other isthmian port, this line would connect the commerce of Colombia, Ecuador, Peru, and Chili with our homeward steamers from the Isthmus. It would take up the ports of Buenaventura, Guayaquil, Payta, Truxillo, Santa, Callao, Pisco, Ariqui, Iquique, Cobija, Copiapo, Coquimbo, and Valparaiso, and return by same route, its arrivals and departures to connect with those of Nos. 1 and 2.

No. 5.—*The West Coast North Pacific line.*—This line commencing also at the Pacific isthmian port, would extend northward, touching at the port of David, Golfo Dulce, Nicaragua, Leon, San Salvador, Guatemala, Tehuantepec, Acapulco, Colima, El Rosario, San Diego, Monterey, and San Francisco, and return by the same route to connect, as near as possible, in time with the arrivals and departures of Nos. 1, 2, and 4.

No. 6.—*The Japan and China line.*—This route, now occupied by the Pacific Mail Company, must be continued during the term of the contract, unless the company wish to come under the advantages which Congress may permit in a general bill for steamship service. Its schedule of running should accord with that of No. 7, so as to connect the business of the South Pacific islands with the upper route to San Francisco. By such an arrangement the communication would be made more perfect than any now existing. The trade of the Spice Islands would fall more to us, and many islands, now but little known, would be opened to American trade, and our cotton and woolen fabrics, our machinery and tools, would find large and increasing markets.

No. 7.—*The Pacific Islands line.*—This line would leave San Francisco, touching at the Sandwich Islands; would proceed by direct route to Auckland, New Zealand, and thence to Melbourne, Australia; thence to Papua Island; thence to Amboyna, Macassar, Sarabaya, Batavia, and Singapore, where it would connect with the Red Sea and East India line, then proceed to Sargon, Manila, and Canton, to connect with line No. 6. On this route a vast and important trade may be secured to us. The Sandwich Island trade is developing rapidly. The imports consist

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of nearly every variety of merchandise known to or made by us. The exports are sugar, molasses, coffee, goat-skins, hides, tallow, wool, whale and sperm oil, whalebone, sheep-skins, walrus-hides, horns, bones, and ivory. The total amount of import and export trade is about $4,000,000.

Auckland, the principal city and seat of government of New Zealand, is built on the south shore of the Water-Mater Harbor. The population is about 20,000. The chief exports are gold, gold-dust, wool, and kowrie gum.

In the years 1863 to 1865 the exports were—

Gold	$34,570,215
Wool	15,212,265
All other articles	3,269,770
Total exports in three years	53,001,250

The chief articles of import were cotton, cotton and woolen goods, draperies, provisions, wines and spirits, and in the same time amounted to $98,101,500. Of this amount $29,946,495 were imported from Great Britain.

Melbourne, the capital city of the colony of Victoria, on the Yarrow River, is about nine miles from its mouth, on the basin of St. Philip. The population of the colony in 1867 was 653,744, and that of the city 126,536. The articles of export consist of gold, bullion, specie, hides, cattle, horses, sheep, skins, wool, &c.

The principal articles of import are wearing apparel, boots and shoes, beer and cider, butter and cheese, candles, coals, cotton goods, flour, furniture, grain of all kinds, drapery, hardware, ironmongery, machinery, oilman's stores, opium, potatoes, provisions, railway materials, silks, saddlery, harness, hats, leather, fire-arms, lead and shot, paper, and all kinds of stationery, soaps, sugars, spirits, wines, tea, timber, tobacco, woolens, confectionery, drugs, gloves, and china-ware, &c.

The value of exports in 1866 were—

Gold	$29,529,935
Wool	15,982,355
All other articles	19,935,440
	65,447,730
Value of imports same year	73,858,555
Total trade	139,306,285

There entered the port in the same year 1,961 vessels, aggregating 639,570 tons. Of these 1,830 were British, 29 French, 27 American, 20 Dutch, 21 German, 18 Swedish, 7 Danish, 3 Italian, 4 Chilian, 1 Prussian, and 1 Hawaiian.

Papua, or New Guinea, estimated to contain from 200,000 to 275,000 square miles; the interior is wholly unknown; even the coasts have been only partially explored by Europeans. The inhabitants are partly Malays and partly a black race, which have been termed Papuan negroes. The Dutch established a trading-post at Uta Mata, on the southwest side, but have not penetrated the interior, or extended the settlement. Nearly the whole coast is indented with large and deep bays and large rivers, which form estuaries; is unoccupied; only an occasional village is to be seen, capable to contain a few hundred people. The country inland is observed to rise into mountainous chains of heights apparently to the snow-line; most of the surface of these yet seems to be

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covered with timber. Many of the finest productions of the archipelago, comprising birds of Paradise, gold, fine woods, resins, bamboos, &c., are brought by the bugis and other island traders.

A station for coal and supplies will be a requisite for our steamers; some one of the many fine bays of this island may prove very desirable, not only for that purpose, but as a depot for our manufactures, and for the collection of East India products received in exchange. The island is believed to possess great mineral resources and large underlying beds of coal, similar to that of Borneo, which is well adapted to steam purposes.

A commercial depot, established at a favorable harbor, would soon command the trade of the contiguous island groups. The Dutch stations are simply trading-posts, with a fort for their protection; they exercise no political control. The right of domain is in the tribes of the coast, with whom peaceful relations are easily maintained.

Amboyna and Macassar are centers of trade for the Spice Islands, and afford large markets for fabrics and other articles suited for exchange with the natives. So great is the trade in spices at these ports that it is no uncommon occurrence to see from fifty to one hundred ships waiting in these waters for the shipment of cargo.

Banjermassin, a fortified city of the Dutch on the island of Borneo, and principal town of an extensive district of same name, the population of which is estimated at 120,000, governed by a sultan whose power is absolute. The inhabitants are celebrated for their fine work in metals, especially in guns, pistols, swords, and arms of all kinds. There is an extensive trade with China. The exports consist of pepper and other spices, gold dust, diamonds, wax, camphor, rattans, edible birds' nests, and small-arms. The imports are cotton, woolen, and silk piece goods, opium, cutlery, and gunpowder. There are no accessible commercial returns to determine the value of the commerce, but as a touching-place for steamers on their route, a trade might be developed by the introduction of our manufactures and machinery, and as coal of a superior quality has been found, and is worked by the Dutch in this district, it is still more desirable to secure such a station to obtain permanently these supplies.

Sourabaya and Batavia, on the island of Java, are cities of large and important trade, forming the import and export centers for a population which, in December, 1862, numbered 13,380,770. The productions and exports consist of the celebrated Java coffee, arrack, copper, fancy wares, cow and buffalo hides, India rubber, indigo, iron-ware, linen and cotton manufactures, oil-cake, provisions, rattans, rice, sugars, tea, tobacco, wine and spirits, specie and bullion. Some of the principal articles of imports are wearing apparel and haberdashery, beer, ale, coals, copper, (wrought and unwrought,) cotton yarns, cotton goods, earthenware, porcelain and glass manufactures, hardware and cutlery, iron, (wrought and unwrought,) lead and shot, linen goods, steam-engines, and various small and large machinery, soap, tin plates, and woolen manufactures. The amount of exports, according to the latest published statement, was $19,911,386, of which $6,470,960 went to Holland. The amount of imports is not given, except from England, which amounted to $8,627,790, principally of manufactured goods. Foreign ships are admitted to these ports on a principle of reciprocity, but they are prohibited from engaging in the coast trade, which is reserved exclusively for Dutch and colonial vessels.

Singapore, the chief city of the several British dependencies known as the Straits Settlements, in the straits of Malacca, and comprising Penang, Singapore, and Malacca. Singapore is built on an island at the southeast-

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ern extremity of the straits of Malacca, and has a population of nearly 100,000. It is a free port, open to the trade of all nations, and has thus become "an *entrepôt* in which are brought together and exchanged the products and manufactures of the western world, of India, Cochin China, Siam, the Malayan Peninsula, and of the whole wide region of the Eastern Archipelago, from its western limits in Sumatra to the meridian of New Guinea and the Philippines." The exports and imports include the products and manufactures of Great Britain, North America, Europe, Australia, India, China, Cochin China, Siam, Manila, Java, Borneo, Celebes, Sumatra, Malayan Peninsula, British Burmah, &c. The amount of the settlement exports for 1867 were $43,702,733. The imports for same year were $46,875,207, aggregating an annual trade of $90,577,940.

Bangkok, the capital of the kingdom of Siam, about thirty miles from the coast of the Gulf of Siam, on the river Menam. Its population is estimated at 400,000. The population of the kingdom is between four and five millions of people, whose exterior commerce is principally through this port. There is a bar at the mouth of the river which obstructs large vessels except at high water, but over this bar and for 110 miles up the river carries from 6 to 8 fathoms, with shores so bold that the ships may sail beside them. Its trade, once on the decline, has been revived, and is now reported more extensive than any other emporium of the East, except Canton, not occupied by Europeans. Its greatest articles of export are sugar, of which it sends out from 10,000 to 12,000 tons per annum; and black pepper, from 4,000 to 5,000 tons per annum; stick-lac, ivory, sapan-wood, and hides. Its imports are white, unbleached, and figured cotton goods; white, yellow, and red cotton twist; woolen goods, silks, crapes, machinery, porcelain, crockery, quicksilver, gold-leaf, lac soy, dried fruits, fans, edible birds'-nests, &c. In 1868, 346 vessels, of 142,373 tons, entered, with cargoes valued at $3,564,490, and 317 vessels, with a tonnage of 135,655 tons, cleared, with cargoes valued at $4, 999,085. The main obstacle to the extension of trade is the careless indolence of the people, which retards the quickness of sales and collections as well as of the shipment of goods. Mr. Pallecroix (vol. 1, page 326) advises foreigners trading with Siam to establish their own warehouses and agents, to sell, to purchase, and accumulate for shipment.

Saigon, the most important city of Cambodia, is on the banks of the Saigon River, about thirty miles from sea. It is a place of considerable business, open to foreign trade, was conquered by the French in 1861, and with the adjoining territory is now held by them.

Manila, the capital of the island of Luzon, the largest of the Philippine Islands, is built on the shores of a deep and spacious bay of the same name, and has a population of, estimated in 1865, 230,000. It is the only port in the Spanish Philippines with which foreign vessels are permitted to trade. The exports consist principally of sugar, coffee, hemp, cordage, sapan-wood, hides, mother-of-pearl-shells, gum-mastic, indigo, leaf tobacco, cigars, tortoise-shell, cowries, horns, canes, rice, paddy, cocoa-nut oil, &c. The imports, ready-made clothing, boots and shoes; cotton goods, in imitation of Madras and Calcutta blue; black and purple stripes and checks, and printed calicoes of same colors; bleached and unbleached cotton goods; gray, black, blue, and purple cotton twist; towels, table-cloths, napkins, and other linen goods; vinegars, beche-de-mer, confectionary, cutlery, machinery of all kinds, arms, plants, and seeds.

The amount of exports in 1864 was	$11,480,[illegible]
Imports, same year	13,396,[illegible]
Total foreign trade	24,876,[illegible]

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Canton, the terminal point of this line, and where, or at Hong-Kong, it will connect with route No. 6, (the Japan and China line,) is situated in the most southerly of the provinces of the sea-board of China. The city is connected with the interior by navigable rivers, which at a very early period made it the chief sea-port of the empire, notwithstanding its great distance from the rich producing districts of central China. The opening of other ports to foreign commerce has lessened, to some extent, that of Canton, and caused it to fluctuate in amount. In 1860 its imports and exports combined reached $34,600,000, falling as low as $21,400,000 in 1865. In 1866 commerce had so far improved that the imports from England, only, amounted to $25,042,370, exclusive of Hong-Kong and Macão, and including these two out-ports of Canton, they amounted to $38,388,165.

Business is transacted at Canton with great dispatch. Merchandise suited to the markets may be sold by the cargo, and purchases of the products of China be filled and shipped with great celerity.

The emigration of the Chinese to our west coast will doubtless enlarge our relations beyond those of any other country, if we supply the facilities of that intercourse by an increase of steam communication. Our cotton fabrics at one time were held in such estimation that imitations of them were made by other countries, and then gradually reduced in quality to bring them into discredit. The peculiar forms of our river steamboats and machinery are also adapted so well to the interior waters of China that these, too, have been imitated to the disadvantage of our steamboat-builders. Closer relations in commerce will more than restore these temporary drawbacks to our people.

No. 8.—*The Queenstown and Liverpool line.*—The trade of Liverpool is so well known that it would be out of place, as well as require too much space, to enter generally into its details; it may therefore be considered sufficient to say that four-fifths of all the trade between the United States and Great Britain centers in her port; that from it depart a larger number of emigrants than from any other single city in the world; that the yearly reports of British manufactured goods from her port average about $437,000,000; and that she receives and warehouses for consumption the principal quantity of cotton in Europe.

No. 9.—*The Galway and Glasgow line.*—This route, if established from either Portland or Boston, would form the shortest and quickest between our shores and Great Britain. It would be favorable to emigrant travel, of great value to the grain-shipping interests for supplies to Ireland, and to the large market of Glasgow, and would be a most popular line for business and travel to that large portion of our citizens who are descendants of Scottish and Irish parentage.

No. 10.—*The Havre and Southampton line.*—Connecting our shores with France on the north and England on the south, at ports which are respectively of large trade and traveling facilities, this will be one of our most important lines.

Havre is the sea-port of Paris, and receives nearly all the foreign products destined for its consumption. In its amount of business it is second only to Marseilles. The total foreign commerce of France per last statement was $1,475,051,040. Havre on the north, and Marseilles on the south, nearly equally divide the larger portion of this vast trade.

The harbor of Havre has been improved to admit the largest class of steamers, to still further facilitate its trade. Its principal imports are cotton, linen threads and linen goods, coal, sugar, coffee, rice, spices, drugs, dye-woods, indigo, iron, tin, timber, flour, grains, salted meats, dried fish, &c. The principal exports are silks, woolen and cotton stuffs,

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champagne and other wines, brandy, laces, gloves, shoes, trinkets, glass, furniture, &c.

Southampton is the center of a great foreign trade carried on by England with Spain, Portugal, the shores of the Mediterranean, and is the place of arrival and departure of her steamship lines for the East and West Indies, South America, Gibraltar, &c., and hence is desirable as a point of connection for trade and passengers for both. The route has long been a favorite one to and from our country.

No. 11.—*The Southampton, Vlissingen and Antwerp line.*—This route places us in direct connection at Vlissingen, near the mouth of the Scheldt, with Holland, it being its chief naval station, connected by rail and water with Amsterdam, Rotterdam, and the Hague, and at Antwerp with all parts of Belgium and Central Europe, by the shortest railway communications. The total foreign commerce of Holland is stated to be $378,939,533, and that of Belgium $370,902,277, by the last annual returns; while that of the two nations for which this would be the shortest ocean route to our shores, crossing Belgium by rail, by Antwerp, as the port of departure, is: Germany, $765,000,000; Austria, $296,113,754. This line would be the one of least ocean exposure and land-travel expense for the larger portion of German emigrants.

No. 12.—*The Hamburg line.*—The total imports of this city for the year 1869 were $308,062,014. Of this sum there were imported from the United States $12,608,233; and of the 47,294 emigrants from this port, 37,261 came to our shores.

No. 13.—*The Skagarack and Baltic line.*—This being an extension of the Hamburg line, to place our ports, by American steamers, in connection with Norway, Denmark, Sweden, and Russia, will open up more rapid relations with those countries, and greatly benefit the emigrants who seek our shores from those northern regions.

The commerce of Norway for 1866 was	$43,952,700
That of Sweden for 1869	70,777,600
That of Denmark has been estimated	23,270,000
That of Russia for 1869 was	442,875,000
	580,875,300

The ports named as those at which the steamers will touch command the larger portions of this trade.

No. 14.—*The Lisbon, Cadiz, and Gibraltar line.*—The initial part of this line might be in the waters of the Chesapeake; extending from these waters are railroads which reach to Charleston, Savannah, Mobile, New Orleans, and to Texas, Arkansas, and Missouri. The markets and the lands of these ports and States are adapted to the sale, interchange, and production of articles suited to the wants of the ports of the Mediterranean, and to receive and employ the skilled labor, mechanic and manufacturing art, which may emigrate therefrom, because of similarity in temperature of climate.

The first point of arrival would be Lisbon. This city has a population of 225,000. The harbor is one of the finest in the world, and most favorably situated for commerce.

Since 1861, so far as can at present be ascertained, no regular annual returns of Portuguese commerce have been made public. They were estimated by English reports for 1864 at—

Imports	$15,405,958
Exports	4,618,785
	20,024,735

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CADIZ.—There are no commercial returns of a reliable character as to amounts of imports and exports of this city of recent date. In 1867 the number of foreign vessels entered and cleared was 806, of which only 12 were American, 412 were British, the remainder being from continental ports. The exports are given only as made to England, and amounted to $15,396,285. They consisted of silk goods, raw silks, wines, olive-oil, wool, fruits, lead, quicksilver, brandy, cork, salt, &c., and are capable of almost indefinite extension.

The articles of import were colonial products, cotton goods, raw cotton, linens, linen yarn, woolens, large quantities of iron, machinery, coal, salted fish, hardware, glass, and earthenware, timber, rice, hides, butter, cheese, &c. The total value of imports was $60,993,554.

Gibraltar, the terminal point of this line, and the connecting point for lines 15 and 16 with it, is a *free port*, with no restriction upon commerce, and from which connecting lines may be formed with every facility. It is a convenient depot for all foreign goods destined for the supply of the contiguous Spanish provinces. The exports to this port from Great Britain are about $6,000,000 annually.

No. 15.—*The North Coast Mediterranean line.*—Malaga; harbor protected on the eastern side by a mole of 2,100 feet long; water from 26 to 30 feet deep; entered with all winds, and affords perfect shelter.

Owing to the want of official returns and the prevalence of smuggling, it is not possible to obtain accurate accounts of the trade. Its articles of export are wine, fruits, particularly raisins, almonds, grapes, figs, lemons, olive-oil, brandy, anchovies, cumin-seed, aniseed, barilla, *esparta labra*, soap, lead, &c. The imports consist of cotton stuffs, iron and hardware, machinery, salt fish, West and East India products, linens, raw cotton, butter, cheese, timber, and naval stores. The imports are estimated to be about $5,855,675, and the exports to about $7,881,165. The trade is on the increase; the exports were greater in 1863 than for any other previous year. The quantity of wine exported was 1,400,000 gallons. Goods may be warehoused for twelve months, paying 2 per cent. *ad valorem* duties in lieu of all charges. At the end of the year they must be entered for consumption or reshipped. The 2 per cent. is charged whether they lay a day or a whole year.

BARCELONA.—Population, 250,000. Harbor is protected by a mole; depth of water, 20 feet. The exports and imports aggregate about $71,643,460 annually, the trade being far larger than that of any other port of Spain. A great impulse has been given to it by the opening of the railroad to Madrid. The principal articles of import are raw cotton, coffee, sugar, and other West Indian products, salted fish, hides, horns, iron and hardware, machinery, &c. It is the center of the Spanish cotton trade, more than 100,000 persons being engaged in its manufacture within the limits of Catalonia, of which Barcelona is the capital. The chief exports are wrought silks, cotton stuffs, soap, fire-arms, paper hats, laces, ribbons, steel, wine, brandy, nuts, almonds, cork, wool, fruits, &c.

MARSEILLES.—Population, 300,131; one of the safest ports in the world. It carries on a trade with all quarters of the globe, and of larger amount than Havre. Its principal imports are oil-seeds from India, Africa, and the Levant ports, raw sugars from the West Indies, Brazil, Réunion, Mauritius, and Manila, cotton and much varied merchandise from all parts. At all times wheat and grain are brought from the Black Sea and the Danube. The exports consist chiefly of silk fabrics, wines, brandies, liqueures, woolen and other stuffs, madder, oil, all colonial products, the celebrated Marseilles soap, and refined sugar. The

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export and import is the largest of any port of France, the total commerce of which has already been stated, and that this city, with Havre, enjoys much the largest portion.

GENOA is the *entrepôt* of a large extent of country. Her commerce, though inferior to what it was when capital of the famous republic of that name, is very considerable, and recently has been increasing. It is a free port—that is, goods may be warehoused and exported free of duty. Her exports consist of olive-oil, rice, vermicelli, hemp, rags, argols, silks, damasks, her famous velvets, thrown-silks, paper, soap, works in marble, alabaster, coral, printed cottons of Switzerland, and other products of that country and the western parts of Lombardy, and of the foreign products brought by sea and stored for reshipment. The imports consist principally of cotton, cotton stuffs and yarn, iron and hardware, linens and woolens, machinery, copper, cotton, wool from Egypt, wheat, sugar, spices, coffee, cochineal, indigo, hides, naval stores, cod-fish, wood, tobacco, lead, wax, &c.

Value of exports to England in 1866	$1,598,975
Value of imports from England in 1866	9,710,390
Total with England only	11,309,365

No other than the English returns are at present to be obtained.

LEGHORN, ITALY.—Population, 83,543. Harbor protected by a mole; depth 19 feet, with a rise of tide 14 inches, making 20 feet 4 inches. It is the greatest commercial city of Italy. Exports, raw and manufactured silks, olive-oil, borax, fruits, valeria, wines, rags, sulphur, cheese, marble, argols, anchovies, manna, juniper berries, hemp, skins, cork, straw-plaiting for hats, and all the productions of the Levant. The imports are exceedingly numerous, comprising all kinds of commodities, excepting those produced in Italy. All the West India products, sugar, coffee, cotton stuffs, yarn, wool, woolen stuffs, wheat, spices, dried fish, indigo, dye-woods, rice, iron, tin, hides, &c., are among the prominent articles.

In 1865, 6,300 vessels entered the port of Leghorn. We have no general returns to show the whole value of commerce from this port, but the exports to—

England, in 1867, were	$2,376,185
The imports thence	4,599,375
Total with England	6,975,560

NAPLES, ITALY.—Population, 418,968. Harbor good. Exports consist of olive-oil, wool, brandy, dried fruits, red and white argols, tallow, liquorice, gloves, madder, hemp, linseed, cream of tartar, sulphur, bones, lamb and kid skins, oak and chestnut staves, rags, saffron, &c. The imports consist principally of English cotton goods, cotton twist, hardware, iron, tin, woolens, sugar, coffee, indigo, spices, dried and peeled cod-fish, &c.

In 1866 the value of the imports was	$24,039,030
In 1866 the value of the exports was	7,008,795
Total trade	31,047,825

MESSINA.—One of the principal ports of Sicily, in population second only to Palermo. Population, 62,024.

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Its imports in 1862	$4,477,315
Its exports in 1862	5 489,830
Total trade	9,967,145

Its exports are wines, (of which a good table wine is sold for about 24 cents per gallon,) silks, fruits, lemon-juice, essences, &c., &c.

ANCONA.—Population, 47,890. Mole, 2,000 feet long, 100 wide, 65 feet above sea, within which vessels lie in safety in 7 to 8 fathoms. It is a free port, with more trade than any port on the west side of the Adriatic, except Venice, connected by railway with Rimini and Pescari, and by steamers to Corfu, Patras, Athens, Smyrna, and Constantinople.

Exports—corn, hemp, bacon, sulphur, &c., in 1863, amounted to	$461,225
Imports—sugar, coffee, and other West India goods, drugs, metals, cotton goods, coal, &c	1,585,595
Total trade	2,046,820

VENICE, ITALY.—Population, 123,672. Imports consist of wheat and other sorts of grain, from Lombardy and the Black Sea; olive-oil, cotton stuffs, and hardware, from England; sugar, coffee, and other West India products, from England, the United States, Brazil, &c.; dried fish, &c. The exports principally consist of grain, raw and wrought silk, paper, woolen manufactures, fruits, cheese, &c., the products of the adjoining provinces of Italy and of her own manufacturing industry. Amount of imports and exports united equal to $14,723,810.

TRIESTE, AUSTRIA, NORTHEAST EXTREMITY OF GULF OF VENICE.—Population in 1864, comprised within the limits of the free port, 105,000. Harbor small, but good, and protected by the Mole Santa Teresa. Having the privilege of "porto franco" conferred upon the town and considerable extent of contiguous country, all goods, with very few exceptions, may be imported into and exported from the city free of all duties whatever, and only when taken into the interior are foreign products subject to duties; being the only sea-port of the Illyrian provinces, the Duchy of Austria, and the greater part of Hungary, she preserves an extensive commerce, which is increasing under the privileges of *free port*. Her imports amounted, in 1867, to $83,857,700, and her exports to $71,826,619, showing an excess of imports over exports of $12,020,878, and a total trade of $161,784,319.

SPALATRO IN ADRIATIC.—Population, 11,000. Seat of the principal trade of Dalmatia; harbor good; exports, products of surrounding country and Bosnia. These principally include wax, maraschino, rosoglio, figs, Dalmatian wines, and olive-oils. The anchovy and tunny fisheries furnish employment to 8,000 people.

RAGUSA.—Population, in 1857, 8,823; is a place of considerable coasting trade, with a good harbor; manufactures silk, leather, and rosoglio.

CORFU.—Political capital of Ionian Islands; part of Greece since 1864; population of the island, 70,000; of the city, 20,000; harbor good; exports, wheat, maize, oats, olive-oil, wine, cotton, flax, salt, oranges, citrons, honey, and wax.

GALLIPOLI is the principal port of the Mediterranean for the shipment of olive-oil, and has, in consequence, a considerable trade. Its population is about 10,000. The product of oil is abundant in the region adjacent, but the superiority of the oil is due to the fact that it is kept in cisterns cut out in the limestone rock, on which the town is built. These are peculiarly well fitted for the preservation of the oil.

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It will keep in them for an indefinite period, and is materially improved not only in clearness but also in flavor.

CANDIA, the principal town of the island of same name, (the ancient Crete,) is named as the point of interchange, for the reason only that it is the most convenient in location for routes 15 and 16 to intersect and interchange. The town is small, the trade inconsiderable, but the island is fertile and has a population of 210,000. Among the productions are olive-oil, silk, wine, raisins, wool, carobs, valeria, wax, honey, oranges, lemons, and various fruits. The hills are covered with forests. The finest description of sponges are obtained on the coast by means of diving.

No. 16.—*The South Coast Mediterranean line, from Gibraltar to Algiers.*—The port of this city, Algiers, has been dangerous in the winter, but an improvement, at a cost of about $4,000,000, is nearly completed, which will make it a sheltered sheet of water. Population was 58,315 in 1862. The trade is principally with France. In 1863 it amounted, exports and imports, to $38,509,000. Excepting as a point of call on the route and possible development of business, it would be of no value to an American line of steamers.

BONA, with a population of about 10,000, and with a very considerable trade, can only be regarded as a point of call, it having no harbor of shelter whatever.

TUNIS has a population of about 100,000 and is the largest and most commercial city of Barbary. It possesses considerable manufactures of silk and fine woolen stuffs, embracing shawls, carpets, mantles, burnooses, caps, turbans, and numerous fancy articles, leather, earthenware, soap, and olive-oil. The imports from Europe consist of coarse woolens, linens, cotton stuffs, hardware, sugar, coffee, spices, dye-stuffs, tin plates, gunpowder, lead, alum, wine, silk, and Spanish wool.

TRIPOLI has a population of 25,000 and a considerable trade with the interior of Africa. It also can only be a port of call because of being on the direct route.

ALEXANDRIA, the principal sea-port of Egypt, on the coast of the Mediterranean, has a harbor of deep water and ample security for shipping throughout the year. Its population is estimated at 150,000. Its imports consist of cotton yarn, cotton stuffs, iron and hardware, copper, plate, plated ware, machinery, coal, arms, ammunition, books, woolen and silk manufactures, timber, cordage, indigo and other dyeing materials, sugar, glass, &c. The exports consist of raw cotton, wheat, beans, barley, maize; linseed, flax-seed; gum-arabic and other gums; wool; senna and other drugs; ivory, tortoise-shell; niter; opium; pearls; dates; soda; ostrich feathers; linen; coffee, and a great variety of minor articles. The value of these exports, exclusive of bullion, as shown by the latest returns, (1866,) was $117,506,749, of which England took $31,689,900.

SMYRNA.—Population, 150,000. The trade of this city is larger than any other in the Turkish Empire, and Smyrna is the great steam center for the whole of the Levant. The caravans from Persia arrive and depart at fixed intervals, which are nearly identical with the arrival and departure of most of the foreign ships frequenting the port. It is also connected with Ghuzel-Hissar, or Aden, by railway. The principal articles of import consist of furs, iron, butter, &c., from Odessa and Taganrog, and of cotton goods, coffee, sugar, cochineal, dye-woods, machinery, iron, coal, tin and tin plates, rum, brandy, paper, cheese, glass, wines, &c., from Great Britain, France, Italy, and the United States. The exports consist principally of cotton, madder, dried fruits, (figs, raisins, currants, &c.,) valeria, opium, sponges, carpets, silks, wool, box-

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wood, emery-stone, drugs, gums, yellow berries, galls, wax, copper, hare-skins, goats' wool, &c.

The relative amounts of the principal articles of import were:

1. Cotton goods, principally white muslin	$2,311,760
2. Fire-arms, hardware, and furniture	2,203,610
3. Iron, shot, and nails	1,989,050
4. Coffee	1,807,618
5. Rum, brandy, and spirits	1,258,610
6. Flour, wheat, and rice	1,126,660
7. Butter and cheese	754,031

The total value of the exports in 1867 were $22,275,850. The total value of imports were $18,031,200. The number of foreign vessels which entered the harbor in 1866 was 1,506. The number which cleared was 1,508. Of these only six, respectively, were American, and 164 were British.

CONSTANTINOPLE.—Population estimated from 750,000 to 1,075,000. The situation of this city for commerce is one of the finest in the world. It is on the narrow straits uniting the Mediterranean and the Euxine seas, and commands the *entrepôt* for the commerce between them. The harbor is formed by an inlet or arm of the sea, *stretching* along the northeast side of the city, and divides it from the suburbs of Galatea and Pera. It can accommodate, in entire safety, more than one thousand ships or steamers of the largest class. It is almost a free port for foreign products, duties being only 3 per cent. on goods landed and 2 per cent. additional when admitted for consumption. Duties on exports of native produce are 9 per cent. on arrival, with the addition of 3 per cent., making 12 per cent. in all when shipped. There are no commercial restrictions. Commercial prohibitions are unknown.

In 1864, 25,069 foreign ships entered and cleared; of these only 9 were American ships, (9 having entered and only 8 cleared, one having changed her flag.)

Constantinople is connected by steamers with London, Liverpool, Marseilles, Trieste, Odessa, the Danube, Smyrna, and other important places.

There are no recent statistics by which the exact amount of the trade of this city can be ascertained, but the amount of imports and exports between it and Liverpool and London for the year 1866 was $42,559,579 35, the imports from England being $9,781,994 in excess of the exports from Constantinople. The imports consist of ready-made clothing, cotton and linen threads, tape, trimmings, pins, copper, (wrought and unwrought;) cotton yarn; manufactures of cotton, (muslins, sheetings, prints, &c.;) earthen-ware, glass manufactures, hardware and cutlery; iron, (wrought and unwrought;) linens, machinery, and mill-work; spirits, refined sugars, tin and tin plates, woolen goods, &c. The exports are yellow berries, bones of animals and fish, box-wood, wheat, barley, maize, fruit, nuts, raisins, galls, gum-tragacanth, madder-root, olive-oil, otto of roses, opium, rags and other material for making paper, rosin, scammony, flax-seed, millet-seed, raw silk, undressed lamb and sheep skins, unmanufactured tobacco, valeria, wool or hair of goats, sheep, and lambs, woolen rags torn up to be used as wool, &c.

No. 17.—*The Red Sea and East India line*, connecting at Alexandria or Port Said with route 16, and passing down the Red Sea to Aden, is important as a point of supplies, on leaving the Red Sea, for coal, &c. It is a free port, and has a very superior harbor. Its imports consist of cotton, cotton and silk goods, grains, live stock, provisions, seeds, metal, and tobaaco. The chief articles of export are coffee, dyes,

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ostrich feathers, gums, hides, skins, ivory, and pearls. Its trade is carried on with Africa, Arabia, Persia, China, and India. Its site is unrivaled as an *entrepôt* for commerce, which, now amounting to about $10,000,000, is regularly increasing. The number of ships entering and clearing at the port at last returns was 973, of which not one was American.

BUSHIRE, the principal sea-port of Persia, in the Persian Gulf, with a population estimated at 20,000. The harbor is of convenient anchorage, about three miles from the town, for the largest class vessels; in a depth of 25 to 28 feet, ships of three hundred tons can enter the inner roads. The merchants of Bushire supply nearly all Persia with articles of foreign growth and manufacture. Most of this trade reaches Bushire through Calcutta, Bombay, and Madras.

The imports consist of coffee, sugar, candy, iron, steel, tin, cotton goods, particularly those of bright colors; woolen goods, cutlery, watches, imitation shawls. Many of these imports, particularly cotton goods, are capable of almost indefinite increase, the caravans from Bushire carrying off through Shiraz and Ispahan to the interior, as rapidly as they arrive, such articles as are suited to that trade, and return laden with raw silk and other products.

There are no accessible returns of the amount of commerce; but British manufactures, by the way of India, to the amount of about $10,000,000 annually, reach the Persian Gulf, while, by the way of the Caspian and Black Seas, large amounts of German and Russian goods find their way through Persia.

The principal exports are raw silk, Kerman wool and other wool, Kerman and cashmere shawls, rich carpets, silk goods, wines, copper, grain, turquoises, pearls, assafœtida, gall-nuts, indigo, Persian tobacco, yellow dye-berries, various drugs, rose-water, velvets, gold and silver brocades.

In all the vast countries watered by the Euphrates and the Tigris there is an increasing desire for trade and a demand for such manufactures as those of Great Britain and the United States. A direct intercourse by American steamers to the Persian Gulf, and the establishment of a depot or depots from which our products could be supplied, would open vast markets to be supplied by our artisans, manufacturers, and agriculturists.

BOMBAY.—On the west coast of British India; population 820,000; the harbor is one of the safest and most commodious in India. It has extensive wet-docks and docks for the building and repair of ships and steamers. In 1864 it had a total export trade, including cotton and bullion, of $192,843,625. The principal articles of export were coffee, cotton, grain, indigo, opium, saltpeter, seeds, shawls of cashmere, silk, silk goods, spices, sugar, tea, tobacco, wool, bullion, &c., cotton and cotton goods forming about one-half the aggregate amount of the exports. The imports, in 1864, amounted to $71,354,750, of goods, and of bullion and treasure, $80,628,295. It was in this year that the heavy amount of $142,075,770 of cotton was exported to Great Britain. Since the reopening of the cotton trade of the Southern States the production of India cotton has rapidly declined, so that in 1867 the total export of all kinds, including cotton and bullion, amounted to only $117,551,120, and the imports to $111,152,520, making a total trade for the port of $228,703,640. The principal articles of import consisted of apparel, coal, cotton twist and goods, fruits, jewelry, machinery, malt liquors, metals, railway materials, silk and silk goods, sugar, candies, teas, wines, spirits, &c. Of the ships and steamers which entered the port in 1864, there were 520 English ships of 439,360 tons; 117 English steamers of

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81,054 tons; 29 French ships of 13,644 tons; 27 American ships of 19,640 tons; 6,000 native craft of 217,794 tons.

COLOMBO, CEYLON.—The population, 60,000; the harbor, an open roadstead, with good anchorage and safe for most of the year. The principal productions of the island are coffee, cinnamon, and cocoa-nut oil. Its exports cover many other articles. In 1865 they amounted to $18,325,875, and were composed of arica-nuts, cinnamon, cocoa-nuts, coffee, cuir rope, cuir yarn, copperas, cotton twist, cotton wool, cotton goods, elephants, citronella, plumbago, rice, spirits, arrack, precious stones and pearls, timber, tobacco, specie, &c. The imports amounted to $26,634,820, and consisted of cotton manufactures, coal, cutlery, hardware, curry stuffs, salted and dried fish, grain, flour, haberdashery, millinery, live stock, poonac, specie, and bullion. The number of ships which entered and cleared was 3,240.

MADRAS.—On the western shore of the bay of Bengal, the government seat of the second presidency of British India, having under it a territory of 257,042 square miles, with a population of 36,060,551. The city has a population of 457,771. There is no harbor; ships anchor in an open roadstead in 8 or 9 fathoms. From October to January the anchorage is unsafe, and until the erection of a solid pier on wrought-iron piles, all goods and persons were landed in surf-boats of peculiar construction. The amount of exports for 1865 was $34,600,935, and of imports, $21,313,445, making an aggregate trade of $55,914,380. The exports consisted of coffee, cotton, cotton twist and goods, drugs, indigo and other dyes, rice, wheat and other grains, gums, gunnies and gunny bags, hides and skins, ivory and ivory-ware, jewelry and precious stones, lac and lacquered ware, oils, saltpeter, seeds, cashmere shawls, raw silks and silk goods, spices, sugar and candy, tea, timber and woods, tobacco, wool, and treasure. The articles of import were apothecaries' medicines and medical stores, apparel, arms and ammunition, beads, books and stationery, carriages, coal and coke, cotton and cotton goods, drugs, dyes of all kinds, fruits, nuts, glassware, guns, horses, ice, jewelry and precious stones, machinery of all kinds, malt liquors, iron, lead, spelter, steel, tin, military stores, naval stores, oilman's stores, paints and colors, perfumery, porcelain and earthenware, provisions, railway materials and stores, salt, saddlery, raw silk, silk goods, spices of all kinds, spirits, loaf-sugar, sugar candy, tea, timber and woods, tobacco, umbrellas, wines, woolen goods, and treasure. The number of foreign vessels which entered and cleared at the ports was 2,280, having 780,787 tons, (of these, only 7 were American, having 4,791 tons,) besides native craft 5,982, having 268,087 tons.

CALCUTTA, the principal city of the presidency of Bengal and capital of British India, is on the eastern bank of the Hooghly River, a branch of the Ganges, and is about one hundred miles from the sea. The population is about 500,000.

The exports, last returns, (1865,) amounted to $88,797,375 of merchandise and $1,266,065 of bullion; the imports to $53,789,595 of merchandise, and $35,111,420 bullion; making an aggregate trade for the year of $178,964,993.

The principal articles of export were raw cottons, cotton goods, twist, and yarn, indigo and other dyes, gunnies and gunny-bags, hides and skins, jute, lac, oils, opium, saltpeter, seeds of all kinds, cashmere shawls, silk goods and raw silk, sugar, candy, tea, woods, tobacco, and bullion. The imports were ready-made clothing, coals and coke, books and stationery, cotton goods, twist and yarn, fruits and nuts, jewelry and precious stones, machinery of all kinds, malt liquors, metals, manufactured

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and unmanufactured; salt, silk goods, railway material and supplies, wines and spirits, woolen goods, bullion, and treasure.

The foreign vessels engaged in the trade were 1,708, having a tonnage of 993,541, of which 23 were American, having 19,826 tons. There were native craft 215, having 16,988 tons.

RANGOON, the chief commercial port of British Burmah for foreign trade, is on the river Irawaddy, about twenty-five miles from the sea. It is easy of access, and commands the trade through a length of river navigation for five hundred miles, reaching a population of 2,300,000 people.

The city of Rangoon has a population of 30,000. It has considerable intercourse by annual caravans to China, and a large shipping trade with Chittagong, Dacia, Calcutta, Madras, the Coromandel coast, Penang, and with the Persian and Arabian Gulfs. The articles of export are teak-wood, terra-japonica or catechu, stick-lac, rice, bees-wax, raw cotton, orpiment, gold, silver, rubies, sapphires, elephants' teeth, and ponies, which are small, hardy, and much esteemed. The imports consist of cotton, muslins, woolens, iron, steel, quicksilver, copper, cordage, borax, sulphur, gunpowder, saltpeter, fire-arms, coarse porcelain, glass-ware, opium, tobacco, cocoa, and arica-nuts. The details of trade are not given in commercial statistics, only so far as relate to shipments by sea. The export shipments of rice, teak, cotton, petroleum, and cutch, in 1866, amounted to $19,807,935, and the imports of cotton piece-goods, silk goods, cotton twist and yarn, and raw silk, amounted to $1,308,244.

SINGAPORE, where it will connect with No. 7 (the Pacific Islands line) and return by same route to Port Said.

The statistics of trade given for the foregoing named ports and the country contiguous to each, the commerce of which is transacted through it, show that the seventeen steamship routes selected traverse the commercial markets of the world.

The existing aggregate commerce which the respective lines of steamers will have for support, as set forth in the foregoing, is as follows:

The steamship lines Nos. 1, 2, 3, 4, and 5 embrace cities and countries, the aggregate commerce of which is....	$792, 464, 870
The lines Nos. 6 and 7, those which aggregate.....	386, 952, 541
The lines 8, 9, 10, 11, 12, and 13, those which aggregate a commerce of	4, 561, 086, 384
The lines 14 and 15, a commerce of.....	559, 979, 153
The lines 16 and 17, a commerce of.....	778, 522, 263
Total	7, 079, 005, 213

which is nearly 77 per cent. of the entire commerce of the globe; and it is further shown by an examination of the imports of these places that our agricultural, manufacturing, and mechanical products are of similar character to those which form the great basis of this vast commerce.

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LETTER

FROM

THE SECRETARY OF THE INTERIOR,

COMMUNICATING,

In compliance with a Senate resolution of March 8, information in regard to the occupancy of the Indian Territory by unauthorized persons.

MARCH 15, 1872.—Referred to the Committee on Indian Affairs and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., March 14, 1872.

SIR: I have the honor to transmit herewith, for the information of the Senate, a copy of a report, dated the 13th instant, from the Commissioner of Indian Affairs, in answer to a resolution of that body, adopted on the 8th instant, in the following words, viz:

Resolved, That the Secretary of the Interior be directed to communicate to the Senate any information in his possession in regard to the occupation of the Indian Territory by unauthorized persons, in violation of treaty stipulations, the number of such persons, and the circumstances of such occupation.

Very respectfully, your obedient servant,

C. DELANO,
Secretary.

Hon. SCHUYLER COLFAX,
President of the Senate.

DEPARTMENT OF THE INTERIOR,
OFFICE OF INDIAN AFFAIRS,
Washington, D. C., March 13, 1872.

SIR: I have the honor to acknowledge the receipt, by reference from the Department, of a resolution of the Senate, dated the 8th instant, calling for "information in regard to the occupancy of the Indian Territory by unauthorized persons, in violation of treaty stipulations, the number of such persons, and the circumstances of such occupancy."

In reply, I have respectfully to report that the latest information upon the subject is contained in a communication addressed to this office on the 28th ultimo, by John B. Jones, United States agent of the Cherokee Indians, in which he quotes from a letter received by him from Isaac T. Gibson, United States agent for the Osage Indians, to the effect that the latter had been across the Arkansas River, twenty miles south of the Kansas line, where he found hundreds of settlers, who informed him that all the good lands for 15 miles down the river were "claimed up;'

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that most of the timber-lands and valleys are claimed from Coffeyville to the Arkansas River, for 20 or 30 miles into the Indian Territory; that the settlers are sanguine of holding their claims, and say, if they are not molested until the first of March, their numbers will be so great that the Government will not dare attempt their removal. Agent Jones adds that there are also many intruders east of the 96th meridian in the Cherokee country.

In addition to the foregoing, it is known that there are many intruders along the lines of the railroads in the Indian Territory, but this office is unable to give their number from the data at present in its possession.

The resolution is respectfully returned herewith.

Very respectfully, your obedient servant,

F. A. WALKER,
Commissioner.

The Hon. SECRETARY OF THE INTERIOR.

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42D CONGRESS, 2d Session. | SENATE. | EX. DOC. No. 52.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

A communication from the Commissioner of Patents in relation to a reorganization of the Patent-Office.

MARCH 15, 1872.—Read, referred to the Committee on Patents, and ordered to be printed.

To the Senate and House of Representatives:

I have the honor herewith to transmit to Congress a recommendation from Hon. M. D. Leggett, Commissioner of Patents, for the reorganization of his office; and also the letter of the Secretary of the Interior accompanying it.

I concur with the Secretary of the Interior in the views expressed in his letter, and recommend the careful consideration of Congress to the subject of this communication, and action which will secure a more efficient performance of the duties of the Patent-Office than is practicable under present legislation.

U. S. GRANT.

EXECUTIVE MANSION, *March* 15, 1872.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., March 1, 1872.

SIR: I have the honor to transmit herewith a communication from Hon. M. D. Leggett, Commissioner of Patents, addressed to me on the 23d ultimo, recommending a reorganization of the Patent-Office. This object can only be obtained by legislation.

I have examined and considered the communication of the Commissioner with as much care as my official duties have permitted. I do not profess, however, such thorough knowledge of the subject as to entitle my opinion to very great consideration; nevertheless, I have arrived at the conclusion that the Commissioner's views and recommendations are, in the main, correct, and that they are worthy of the serious consideration of Congress.

I am very well satisfied that, by dividing the subjects that come under consideration in applications for patents into groups, divisions, and classes, in the manner proposed by the Commissioner, very great improvement will be made upon our present system of granting patents; greater accuracy will be arrived at during the process of examination,

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and the business, I have no doubt, will be simplified and facilitated, and much litigation avoided.

I am also of opinion that the Commissioner's proposition to make the Patent-Office a distinct department of business, separated entirely from the Interior Department, is worthy of consideration. In its present organization the Office is almost independent of this Department, and is attached to it more as a matter of form than by any real and necessary connection.

With the qualification before expressed, as to the value of my opinion on this subject, I have the honor to submit the Commissioner's report, with these observations, for your consideration, to be by you communicated to Congress, if you deem the subject worthy of such consideration.

I have the honor to be, very respectfully, your obedient servant,

C. DELANO,
Secretary.

To the PRESIDENT.

UNITED STATES PATENT-OFFICE,
Washington, D. C., February 23, 1872.

To the honorable the Secretary of the Interior:

SIR: In order to more effectually promote the object of the establishment of the Patent-Office, I am convinced that its partial reorganization, upon a plan better adapted to its increasing business, is of the utmost importance. With a view to securing the necessary legislation for such reorganization, I have the honor to submit the following:

Laws creating patents for inventions are made for the benefit of the public at large, and not for inventors, except as they are a part of the public. Their immediate object is to multiply labor-saving machinery and useful articles, processes and compounds; to hasten their perfection by improvements, and to expedite their introduction into common use. To accomplish these results, the patent laws offer a premium to inventors in the form of the right to the exclusive use of their inventions for a limited period of time. These laws should be so framed and executed as to furnish the maximum of stimulus to inventors, and put the minimum of restraint upon the manufacturing interests of the country.

If patents are granted only for real inventions, and limited strictly to what is invented, the monopoly can never be burdensome, because it is limited to what the inventor has begotten from his own brain, and which the world would not have become possessed of, at least for the time being, but for his genius, and to what the public will not purchase except that be economy to do so. It may also be doubted whether valid patents exercise any such restraint upon manufacturing or trade as to diminish either. Capital naturally seeks investment in those enterprises in which it can be protected against ruinous competition. Such protection patents tend to secure. Many millions of capital now employed in manufacturing operations would have sought other channels but for the stability in trade secured by the grant of patents.

Few men would have courage enough to develop and introduce new machinery if, when a demand is created for it, all others are at liberty to enter upon the manufacture and supply that demand. Had it not been for the protection afforded by patents, it is doubtful whether we should as yet have advanced much beyond the bull-plow, the sickle, and the hand-loom.

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The policy of a patent system being recognized in our fundamental law, and fully established by the history of the country, it becomes important to consider how the system may be made the most efficient. The greater the confidence of the public in the validity of patents issued, the greater will be the encouragement to inventors, and the less will be the restraint upon trade and manufactures. A wrong is perpetrated upon inventors and the public when patents are issued upon inventions already patented, or previously known and in public use. Under the English patent system, a patent is granted to every applicant, if his specifications and drawings are correct in form, without reference to whether it has been patented before, or whether it has been before invented and gone into public use. The possession of such a patent does not carry with it even *prima-facie* evidence that the patentee is entitled to what he claims. For this reason the patent itself is comparatively worthless, and in very many cases an absolute incumbrance to an inventor; and at the same time the possibility that it may be sustained by the courts, intimidates capital invested in manufacturing articles which interfere with the claims of the patent. Either the inventor or the manufacturer adversely interested must, at considerable expense, cause an investigation to be made, either by experts or in the courts, as to the validity of the patent, before either knows his rights. The great expense and inconvenience of such patents make it very doubtful whether they contribute to the development of the useful arts. One result in England is, that very many useful inventions in almost every art are neither patented nor made public without patents, but are used under lock and key. Processes are kept secret, and "positively no admittance" is found on the door of most of the manufacturing establishments, which are rigidly and persistently closed against the public.

The theory of the American system is to grant only valid patents, and at a cost so small as to make them obtainable by inventors of very small income. Under the protection of these patents, manufacturing is opened to the inspection of the world; and when the patents expire, the public may understand the processes and make the devices. The English system grants a patent if the alleged invention is properly described and the claims are in legal form. The American system, in addition to legal form and proper description, demands that the alleged invention shall be "new and useful;" "*new*" in the sense that it has not already been patented; that it has not before been known and used by others in this country, and that it has not been described in any printed book or other publication; and "*useful*" in the sense that it is not hurtful—i. e., is not naturally adapted to such use as would be injurious to the public—and that it possesses the characteristics and is capable of performing the functions ascribed to it.

The office does not, and for very evident reason should not, attempt to decide upon the question of the value of an invention. If it is capable of being applied to useful purposes, the courts have uniformly held that it has the requisite usefulness to answer the demands of the law. In this sense, an invention may be useful and at the same time utterly valueless, for the reason that there may be other and better well-known means for securing the same results. The question of value can only be determined by the test of experiment.

Many inventions, which at first appear very trivial, turn out to be of great value, and others, which at first excite hopes of great value, prove, upon trial, to be utterly worthless. Undoubtedly very many patents are issued upon inventions having no value to the inventor or any one else; but experience has shown that such patents do no harm. If an

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inventor is willing to incur the expense of obtaining a valueless patent, he being the only one to suffer, should be left free to judge for himself as to the propriety of such expenditure.

Patents on valueless inventions are harmless; but not so with such as interfere with existing patents, or with processes and manufactures already known to the public.

The theory of our system requires a thorough, expert examination before a patent is issued, and a final rejection of all applications that do not present proper matter for valid patents. Many applications, embracing important and valuable inventions, are accompanied by faulty descriptions and by claims much broader than the inventions—so broad as to invade patents granted to others, and often to cover what is already well known to the public. It is the duty of the office to ascertain just what is new and useful in the applicant's invention, and then to limit the description and claims to that of which he is really the first inventor. A patent thus limited is the most valuable to the inventor, and the least restrictive upon manufacturing and trade.

To give an inventor an instrument that shall afford him full protection for all he has invented, and yet restrict him from invading the rights of the public or of other patentees, is, in theory, the duty of the Commissioner of Patents. To discharge this duty, however, requires such a combination of expert knowledge, legal attainments, judicial ability, and executive talent as is rarely, if ever, found in any one person. Hence, in the very infancy of the Patent-Office, an examiner was appointed to assist the Commissioner in his work. He examined applications and reported to the Commissioner, and the Commissioner in person determined whether patents should or should not issue, and what amendments and alterations should previously be made. But for many years the number of applications has been so great as to make this personal attention of the Commissioner, except in special cases, an utter impossibility. For five years past the applications for patents have averaged about seventy per day, and the probabilities are that the number will gradually increase with the increased population and development of the country.

Under this expansion of business, the examining corps has gradually increased from one to sixty-six. The Commissioner has been obliged to abandon all attempts at giving personal attention to any applications, except such as come to him on appeal from adverse decision of the examiners, and, under the present organization, the examiners necessarily have authority to reject applications, or to pass them to issue. When an examiner decides to pass a case for issue, there is no review of his decision, unless by accident the Commissioner's attention is called to it, which very seldon happens, as the proceedings are secret and *ex parte*. The same is true in rejections, except when the applicant pays an extra fee, and takes an appeal. The result is, that many patents are issued that should never be granted; others, on good inventions, are issued in improper form and with bad claims; and many applications covering valuable inventions are rejected and lost to worthy inventors.

With so many tribunals authorized to give final decisions, there can be scarcely an approximation to uniformity of practice on the very matter where accuracy and uniformity is most to be desired. This evil has become so great as to furnish to many persons an argument against the entire system of preliminary examinations. The fault, however, I am fully convinced, is in the *organization* of the examining system, and not in the system itself. The fault in the present organization is more serious and fundamental than the mere want of uniformity in decisions.

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There being no authoritative review of the work of the examiners, there is no protection against hasty and careless examinations, and, what is still worse, the door is thrown wide open to incessant importunings and to corrupt influences of every kind. I do not know that any examiner was ever induced by any improper influence to pass an application to issue, or reject one that ought to have passed. I have no good reason to suspect the personal integrity of any examiner. The present corps consists of men of high character and ability. But I deem it unnecessary and unwise that interests of such importance should be thus exposed, resting solely upon the integrity of a single officer. Very large amounts are often involved in these decisions. Dishonest applicants, it may be presumed, are ready to pay very liberally for patents when they can't get them without, and outside parties adversely interested can often afford equal liberality to secure final rejections.

The present organization furnishing no certain check to such fraud, and the Commissioner having no basis but the established integrity of the examiners upon which to deny its existence, corruption is freely and almost daily charged, and by many fully believed. The consequence is, that the value of preliminary examinations is seriously affected, and public confidence in the validity of patents is much less than it should be. It is doubtful whether in any other Bureau or Department of the Government equal interests are intrusted to the examination and final decision of a single person, with practically no check against carelessness, ignorance, and fraud.

Of course the defects cited cannot all be prevented. Errors of judgment and susceptibility to temptation are incident to human nature; and whatever may be the checks and guards, their ugly forms will occasionally crop out in all positions of public and private trust.

While all the examiners could report in writing upon each application directly to the Commissioner, and he review the reports, determine the legal points, and finally decide to issue or reject, uniformity was possible. The review by the Commissioner was an incentive to thoroughness and fairness upon the part of examiners; and the knowledge the examiners had of each case, was a check upon the Commissioner. The immense proportions to which the business of the office has since grown, renders it impossible to return to the simple organization of its infancy; but I believe the remedy for existing evils must be sought in that direction.

To examine, for instance, an application for a patent on an improvement in power-looms, requires the services of a man who has made power-looms a special study, and is thoroughly familiar with all their perplexing intricacies and thousand forms. To obtain this knowledge, requires peculiar taste, close observation, and laborious study. To judge correctly of the legal bearing of the facts developed by the examinations of such an expert, to correct errors of statement, description, and form, and to determine the intricate legal questions of patentability, abandonment, laches, &c., calls for legal and judicial ability, and requires different studies and different qualifications. The two offices can be, and I think should be, separated. The examiner should be just what his title imports, an examiner, while the authority to determine legal questions, and to decide as to allowing or rejecting applications, should be left to another tribunal. Thus, by requiring the action of two officers upon each application, each separated from the other, and each directly responsible to the head of the office, the most effective check to ignorance, carelessness, and improper influences is secured.

The records of the Patent-Office show that about seven thousand and five hundred different things become subject of applications for patents.

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These seventy-five hundred different subjects, according to their analogies, are thrown into one hundred and forty-five classes. The one hundred and forty-five classes are assigned to the sixty-six different examiners in such manner as to throw classes most nearly analogous together, and at the same time divide the labor as equitably as possible. This arrangement enables each examiner, if qualified for his place, to become a very competent expert in the classes assigned to him.

These one hundred and forty-five classes, I find, can again be reassembled into nine different groups, and still retain in each group so close an analogy as to make it exceedingly desirable that the classes thus associated should be grouped together in the actual work of making examinations. A table showing the practicability of such grouping is hereto attached.

The reorganization which I would most earnestly recommend, and which I believe to be the only one capable of remedying the existing defects, is thus to group the examiners, and appoint a competent chief at the head of each group. This would require nine additional officers of high qualifications. But, under such organization, the three examiners-in-chief, and the examiner of interferences, could and should be dispensed with. The balance of the present examining force should then be so far reorganized as to make nine deputies, or assistants, to these chiefs of groups, and to do away with the distinction of principal, first and second assistant examiners. The examining corps would then consist of nine chiefs, nine deputies, and fifty-seven examiners, or seventy-five in all, in place of the three examiners-in-chief, one examiner of interferences, twenty-two principal examiners, twenty-two first assistant, and twenty-two second assistant examiners, or seventy in all, as now organized, making a net increase of only five officers. But to secure men of the requisite education and legal ability to fill the position of chiefs of groups, would probably require that better salaries should be paid than are now received by any of the examining corps. This increase of officers and expenses should not be an argument against the reorganization. The receipts of the office would still be largely in excess of the expenditures. There can certainly be no good reason given for levying a special tax upon the inventive genius of the country for the purposes of general revenue. Inventors are generally men of very small means, and if the fees they pay cannot be appropriated to secure for their applications more reliable examinations and better patents, then their fees should be diminished to the extent of requiring them to pay only the actual cost of such as they get. There is, however, scarcely any demand for a diminution of fees; but there is a demand, incessant and clamorous, for more reliable work upon the part of the office. The character of the work can hardly be improved until there is provided the means of a better system of checks and supervision. The inventors only ask that the money they pay shall be used in perfecting the character of the work for which they are required to pay it.

The salary of examiners-in-chief is three thousand dollars, ($3,000;) of examiners, two thousand five hundred dollars, ($2,500;) of first assistant examiners, one thousand eight hundred dollars, ($1,800;) and of second assistant examiners, one thousand six hundred dollars, ($1,600.) If, under the proposed organization, the salary of chiefs of groups should be fixed at four thousand dollars, ($4,000;) deputies at two thousand five hundred dollars, ($2,500,) and examiners at two thousand dollars, ($2,000,) the increase of expense would be thirty thousand seven hundred dollars ($30,700) per annum; a very small advance as compared with the increased efficiency of the organization.

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The office of examiner of interferences was created for the reason that it was thought some of the examiners in charge of classes lacked the legal knowledge necessary for the decision of the peculiar questions arising in closely contested cases. The chiefs of the suggested groups would be much better qualified to hear these cases than a special examiner of interferences, for the expert knowledge is as essential as the legal. While a person can acquire a pretty good knowledge of a group, consisting of twelve or fifteen classes, to get the same information in regard to the one hundred and forty-five (145) classes would be hardly possible. Should authority be granted to effect the reorganization herein suggested, I am clearly of the opinion that the character of the work of the Patent-Office would be improved by abolishing the office of examiner of interferences.

The board of appeals, consisting of three examiners-in-chief, was created to serve two special purposes; one to secure greater uniformity in the decisions of examiners in charge of classes, and the other to relieve the Commissioner of a portion of the burden of appealed cases.

The investigations of cases appealed to this board have, in general, been impartial and thorough, and its decisions able and instructive. Yet, as only rejected cases can be appealed, the influence of the board upon the character of the work of the primary examiners has been scarcely perceptible; for while in some cases they may prevent an improper rejection, their action can have no possible influence to prevent primary examiners from causing the issue of bad patents.

In the proposed organization, all decisions, either rejecting or passing for issue, would be made by the nine chiefs of groups. Appeals from the decisions of any one of these chiefs of groups should be to not less than three of them, sitting as a board of appeals, of which the officer appealed from should not be a member. This board of appeals should be a permanent tribunal, with a permanent clerk and records; yet its members would be changed frequently, so as to interfere least with their duties as heads of groups, and so as to bring each of the nine often in the board, and under such arrangement that each may sit in the board with every other. By this plan each chief is so often brought to consider important questions with every other chief, that uniformity of practice and carefully considered decisions would almost necessarily be the result. The personal supervision of the Commissioner, his opportunity of reviewing the action of these chiefs upon interlocutory questions, and his re-examination of cases appealed to him from this board of appeals, would be sufficient to prevent these heads of groups from forming "grooves," and securing uniformity in decisions by mere machine process. The relations of the Commissioner with the nine chiefs could be more direct and intimate than is possible with the large number now authorized to give final decisions, and he could then with more propriety be held responsible for want of uniformity in the office practice and for the general character of the office-work.

Under such organization, applicants and attorneys might and should be excluded from direct access to the examiners, thereby giving the examiners much more time for their work, and leaving them free to examine and report each to the head of the group to which he belongs. Parties and their attorneys would have hearings before these heads of groups, chief examiners, or whatever name might be given them by law.

I have conferred freely with all my predecessors who have filled the position I now do since the year 1860, and all agree with me as to the defects of our present system, and likewise on the essential features suggested as a remedy.

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To briefly recapitulate:

Our present system is defective in this: The applicants and their attorneys have direct access to the examiners. The examiners determine all questions of fact and of law, and pass cases for issue or reject them. Practically there is no review of their decisions, except as appeals are taken in rejected cases. From their decisions passing cases for issue, the proceedings being *ex parte*, there is no appeal. The result is, many bad and interfering patents are issued, inventors and manufacturers too often are put to great and needless expense to determine their rights, the public confidence in the office is diminished, and the validity of all patents issued is suspected.

To remedy this, I suggest that all authority to pass for issue or reject be taken away from the examiners; that they be limited exclusively to the duty of making examinations; that the examiners be divided into nine groups, and that a competent man, educated in law, in science, and in mechanics, be appointed at the head of each group, under the designation of chief examiner, or such other title as may be given him by law; that the examiners report the results of their examinations to these chiefs, and that each chief, in his own group, determine the questions of passing to issue or rejection, after giving the party a full hearing; that appeals from these decisions be to a board of appeals, consisting of not less than three of these chiefs, to be selected by the Commissioner, and changed from time to time, as often as he may deem necessary and proper. Under this arrangement, the present board of examiners-in-chief would be unnecessary and could be dispensed with. The chiefs being familiar with patent law, each could be intrusted with the examination of interferences arising in his own group, and the examiners of interferences could be abolished.

To carry the plan herein suggested into operation requires additional legislation, and the object of this communication is to present, in writing, in compliance with your suggestion, the prominent features of the plan, hoping that, if it meets your approbation, you will recognize the propriety of bringing the subject before Congress at an early day, in such manner as will be most likely to secure for it the consideration which its importance merits.

The business of the Patent-Office is of such character that it is neither understood nor fully appreciated, except by those whose duties have brought them into close relations with the office. The classification of the employés, and the special qualifications they must possess to properly discharge their duties, are radically different from any other bureau or department. There is scarcely anything in the purpose for which the Patent-Office was created, in the duties which it has to perform, or in the plan of its organization, that is at all analogous to the bureaus with which it is associated.

For these reasons, its connection with the Department has always been of the most nominal character. It has had all the disadvantages of such connection, with very few of its benefits. The duties and necessities of the office are such that it seems to me they ought to stand out alone before the country and before Congress. I feel quite confident we should then get better legislation for the office and better work from it. The more rank and dignity that is given to an official position, the better men can be obtained to fill it, even at the same salary. A subordinate position in a bureau has so few attractions, except salary, that I fear it will be difficult to obtain the services of men of the proper character, scholarship, and legal attainments to fill the important and responsible positions suggested in a reorganization of the Patent-Office.

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I would, therefore, respectfully invite your attention to the propriety of severing the office from the Interior Department, and its establishment as a department by itself. Until this is done it will be difficult ever to secure for it the legislation its importance demands, and still more difficult to retain in its subordinate positions the class of talent necessary to the proper discharge of its duties.

Respectfully submitted.

M. D. LEGGETT,
Commissioner of Patents.

Groups.	Divisions.	Classes.
Agriculture	Culture	Garden implements, harrows, plows, seeders.
	Harvesting	Harvesters.
	Steading	Bee-hives, butchering, dairy, fences, stabling.
	Thrashing	Thrashers.
	Tobacco	Tobacco.
Chemical	General	Beer and wine, bleaching, caoutchouc, chemical miscellaneous, fuel, gas, gunpowder, ice, manures, oils and fats, paint, preserving, stills, sugar, tanning.
	Metallurgic	Metallurgy, ore, plating.
Domestic	Arts	Educational, fine-arts, jewelry, music, photography.
	Clothing	Apparel, crinoline and corsets, toilet, umbrellas and fans, felting.
	Furniture	Beds, brushes and brooms, furniture, kitchen utensils; laundry.
	Sports	Fishing, games and toys.
Engineering	Architecture	Bridges, builders' hardware, carpentry, masonry, paving, roofing.
	Land conveyance	Carriages and wagons; railways—A. The way; B. Cars; C. Car-mountings.
	Marine	Boats; ships—A. Structure; B. Propulsion; hydraulic engineering.
	Mechanical	Excavating, hoisting, journals and shafting, mills, mechanical powers, presses.
Fiber	Paper	Paper-making, paper manufactures.
	Printing	Printing.
	Sewing-machines	Sewing-machines, knitting-machines, netting.
	Stationery	Book-binding, stationery.
	Textile	Brakes and gins, carding, cloth, cordage, silk, spinning, weaving.
Leather, wood, stone, clay, and glass.	Clay	Clay.
	Glass	Glass.
	Leather	Boots and shoes, harness, hose and belting, leather manufactures, trunks.
	Stone	Stone, lime, and cement.
	Wood	Saws; wood tools; wood machinery—A. General work; B. Lathes; C. Special work.
Metal	Casting	Casting.
	Cutlery	Cutlery.
	Grinding	Grinding and polishing.
	Locks	Locks and latches, safes.
	Metallic manufactures	Bolts and nuts, clasps and buckles, files and rasps, hardware and trimmings, horseshoes, wire-working, nails and spikes, needles and pins, manufacture of railway-track and car-irons, tools, tubing and wire, wood screws.
	Metal-working	Bending and straightening, boring and drilling, forging and swaging, punching and shearing, rolling, turning and planing, tools.
	Sheet-metal	Sheet-metal.
Philosophical	Electricity	Electrical apparatus, signals.
	Fire-arms	Fire-arms, ordnance, projectiles.
	Mathematical	Measuring instruments, draughting, horology, optical instruments.
	Surgical	Artificial limbs, coffins, dental instruments, surgical instruments.
Steam, heat, and light	Heating	Dryers, stoves, and furnaces.
	Hydraulics	Baths and closets, pumps, water-wheels, water-distribution.
	Lighting	Lamps and gas-fittings.
	Pneumatics	Pneumatics, aëration, and bottling.
	Steam	Governors, steam-engines, locomotives, valves, steam-boilers.

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LETTER

FROM

THE SECRETARY OF THE NAVY,

COMMUNICATING,

In compliance with a Senate resolution of December 20, 1871, a statement in relation to the expenses of vessels on the coast of San Domingo.

MARCH 25, 1872.—Ordered to lie on the table and be printed.

NAVY DEPARTMENT,
Washington, March 22, 1872.

SIR: In answer to the resolution of the Senate, adopted on the 20th of December last, directing the Secretary of the Navy—

To communicate to the Senate an account of the expenditures incurred in the support and navigation of the several ships already reported to the Senate by the Secretary as employed on the coast of San Domingo, since the beginning of negotiations for the acquisition of part of that island, setting forth the expenditures on account of each ship, and the sum total taken from the annual naval appropriations on account of all these ships; and that the Secretary also report to the Senate how much, if any, such expenditures are greater than would have been incurred had such ships been in service elsewhere; and also how many vessels are usually in service in the waters adjacent to the West Indies—

I have the honor to submit herewith two reports, one from the Chief of the Bureau of Equipment and Recruiting, and the other from the Chief of the Bureau of Navigation, dated respectively the 19th and 18th instant, embracing most of the information called for by the Senate.

This information, depending, as it does largely, on the return and settlement of the accounts of the paymasters of the various vessels, which are made at long intervals, could not be furnished earlier, and is now only approximate, though it is believed, however, to be nearly accurate.

The expenses are no greater than if the same ships had been in service elsewhere in the West Indies, and somewhat less than if they had been employed on some of the other stations.

The vessels in the waters adjacent to the West Indies are usually nine or ten in number.

Very respectfully, your obedient servant,

GEO. M. ROBESON,
Secretary of the Navy.

Hon. SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

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NAVY DEPARTMENT,
BUREAU OF EQUIPMENT AND RECRUITING,
Washington, March 19, 1872.

SIR: In compliance with your directions, I have collected and submit herewith the accompanying statement of "the expenditures incurred in the support and navigation of the several ships already reported to the Senate by the Secretary of the Navy as employed on the coast of San Domingo, since the beginning of negotiations for the acquisition of part of that island, setting forth the expenditures on account of each ship, and the sum total taken from the annual naval appropriation on account of all these ships." This statement is of course an approximate one, but is as nearly exact as it has been found possible to make it.

These expenditures are no greater than would have been incurred had such ships been in service elsewhere upon the West India station.

From six to ten vessels are usually on service in the waters adjacent to the West Indies.

Expenditure on account United States steamer Severn, from November, 1869, to December 20, 1871	$53,961 73
Expenditure on account United States steamer Congress, from November, 1869, to December 20, 1871	64,688 45
Expenditure on account United States steamer Nantasket, from November, 1869, to December 20, 1871	130,596 75
Expenditure on account United States steamer Swatara, from November, 1869, to December 20, 1871	66,595 40
Expenditure on account United States steamer Yantic, from November, 1869, to December 20, 1871	49,576 60
Expenditure on account United States steamer Dictator, from November, 1869, to December 20, 1871	15,073 60
Expenditure on account United States steamer Albany, from November, 1869, to December 20, 1871	12,787 30
Expenditure on account United States steamer Seminole, from November, 1869, to December 20, 1871	16,136 70
Expenditure on account United States steamer Tennessee, from November, 1869, to December 20, 1871	64,215 40
Total	473,611 93

The Saugus, Terror, and Nipsic did not visit San Domingo during this period. Sum total taken from annual naval appropriations, on account of all these ships, $473,611 93.

I have the honor to be, very respectfully, your obedient servant,

WM. REYNOLDS,
Chief of Bureau.

Hon. GEO. M. ROBESON,
Secretary of the Navy.

BUREAU OF NAVIGATION, NAVY DEPARTMENT,
Washington, March 18, 1872.

SIR: I have the honor to transmit herewith a statement of expenditures under this Bureau, on account of vessels employed on service at the island of San Domingo, from November 15, 1869, to December 20, 1871.

Very respectfully, your obedient servant,

DAN'L AMMEN,
Chief of Bureau.

Hon. GEO. M. ROBESON,
Secretary of the Navy.

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BUREAU OF NAVIGATION.

Statement of expenditures under the Bureau of Navigation, on account of vessels employed on service at the island of San Domingo, from November 15, 1869, to December 20, 1871.

Name of vessel.	Rate.	Number of days employed.	Cost of service.
Nantasket	Third	584	$4,865
Congress	Second	168	1,706
Swatara	Third	450	3,749
Tantic	Third	287	2,381
Dictator	Second	83	833
Albany	Second	38	386
Seminole	Fourth	39	254
Tennessee	Second	104	1,055
Shawmut	Third	110	916
Severn	Second	85	863
Total			17,608

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 54.

LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a Senate resolution of March 8, 1872, information in relation to the wharf or river-frontage used by the United States at New Orleans.

MARCH 25, 1872.—Ordered to lie on the table and be printed.

WAR DEPARTMENT, *March 22, 1872.*

The Secretary of War has the honor to send to the United States Senate, in answer to a resolution of the 8th instant, calling for information as to the extent of the wharf or river-frontage at the port of New Orleans claimed or occupied by the Government, and the basis of such claim or occupancy, copies of papers prepared in the Quartermaster General's Office, which will convey all the information possessed by the Department on the subject.

WM. W. BELKNAP,
Secretary of War.

HEADQUARTERS DEPARTMENT OF LOUISIANA,
New Orleans, Louisiana, August 23, 1865.

SIR: I am instructed by the major general commanding to notify you that the levee and wharf-space hereafter described has been selected and reserved for military purposes, and will not be included in any arrangements that may be made by the city authorities for leasing the levees and wharves.

1. The levee and wharf space between New and Jackson streets.

2. Three hundred feet front from custom-house office-landing to Canal-street ferry. Landing 120 feet deep from bank of the river, and situated between Crossman and Canal streets.

3. Between First and Fourth streets.

4. For about four weeks the use of posts 26, 27, and 28, will be required.

5. So long as the St. Joseph-street railroad is run by the United States, the levees and wharves between Julia and La Fayette streets, and the space occupied by the railway and depot along the entire levee and covered by the railway.

The same rule will apply to any wharf or levee space that is occupied by the Navy or Treasury Departments.

The major general has learned that the city authorities contemplate the alienation of this property for a long term of years, and he thinks it proper to suggest for your consideration the fact that the title to all this property is in the United States as captured.

The authorities of the Government have conceded to the city the occupation, use, and profits of so much of it as is not required for public purposes, but the title by capture has not yet, so far as he has been advised, been relinquished by the Executive Departments of the General Government, and, until that is done, any leases or other disposition of this property should be for a short period.

I am further instructed to say that the commanding general has learned only by accident of the action contemplated by the city authorities, and that he desires that

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any future action that may be contemplated by the city authorities, in which the interests of the United States are directly or indirectly involved, be seasonably reported for action here, or be submitted to the proper authorities at Washington.

Very respectfully, your obedient servant,

GEORGE L. ANDREWS,
Brigadier General, Chief of Staff.

Hon. HUGH KENEDY,
Mayor of New Orleans, New Orleans, Louisiana.

HEADQUARTERS DEPARTMENT OF LOUISIANA,
New Orleans, Louisiana, September 4, 1865.

His honor the MAYOR OF NEW ORLEANS:

SIR: Your communication of the 24th ultimo has been considered in connection with the report of the chief quartermaster of the department, subject to this conference with the city surveyor. As the result of this examination, I will recommend to the War Department the appointment of a joint commission for the purpose of selecting the levee and wharf space required by the War, Navy, and Treasury Departments, to be held as permanent reservations; the selection to be made with reference to the wants of these Departments in a period of peace, and with due regard to the commercial interests of the city of New Orleans; and will recommend that the rights and interests of the Government to the remainder of the levee and wharf space held by the city of New Orleans, at the time of capture by the forces of the United States, be relinquished to the city, subject to the conditions that no harbor, wharf, light, or hospital dues shall be charged against any vessel belonging to the Government of the United States.

I have believed that the formal surrender of the rights acquired by the United States, during and in consequence of the rebellion, would not be formally relinquished until the State or States in which they were acquired were restored to the Union; but in view of the suggestions made by you of the importance of the projected work to the commercial and financial interests of the city, I will ask that the action recommended be taken at the earliest practicable moment.

In the mean time, the instructions of the 24th ultimo, with relation to the reservations for military purposes, will stand as modified by the chief quartermaster and city surveyor.

The suggestions in my communication of the 24th ultimo, with regard to the period of the contemplated leases, were made in the interests of the city. I did not and do not think it wise or prudent for the present city government to commit the city to a course of action that may result in useless and costly litigation, while I do not doubt that the city of New Orleans will ultimately be fully reinstated.

That action has not yet been taken, and the time and manner are more or less remote and contingent, and until that is done, the want of power in the city government opens the road for litigation, and that litigation will determine nothing, so far as the city is concerned, except to increase the tax levy.

You will permit me to add that the Government of the United States is not responsible for the bankrupt condition of the city finances, nor are its officers and agents amenable to the reproach which you make against them. I cannot answer for officers of other departments than that in which I am serving, but I believe that the history of New Orleans, since its occupation, will show that they have never been slow to concede to the city whatever they could legally concede, and to render any assistance that it was in its power to render, and I know that nearly every military commander since the occupation has made himself personally responsible to the Treasury, by diverting large sums of money from their original destination and applying them to the wants of the city, its charities, and its poor.

The subject referred to in the last paragraph of your letter was referred to me some time since, and so much of your letter to his excellency the President as related to the New Orleans and Jackson and New Orleans and Opelousas railroads, was reported upon some time since, and that which relates to the wharves will be so soon as the indebtedness of the city to the different departments of the Army can be ascertained.

I am, sir, very respectfully, your obedient servant,

E. R. S. CANBY,
Major General, Commanding.

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Indorsement on communication of J. M. Courtenay, agent of New York Mail Steamship Company, asking the approval of Major General E. R. S. Canby on the subject of building a wharf for said company.

"HEADQUARTERS DEPARTMENT OF LOUISIANA,
"*New Orleans, September* 15, 1865.

"Respectfully returned. The military authorities will not interfere with the wharves, except so far as to prevent the Government from being ousted from the occupation of such wharves and levees as are required for public purposes. The mayor of the city has been fully advised upon these subjects and to the points to which that interference will be limited. The locality covered by the lease herein referred to is not one of the points. I do not think, however, that it will be wise, either for the city, or for the lessees under the city, to embark in enterprises involving large expenditures, until after the corporation has been fully reinstated in its original rights. This can only be done by executive authority, and I presume will be done within a short period.

"E. R. S. CANBY,
"*Major General, Commanding.*"

HEADQUARTERS DEPARTMENT OF LOUISIANA,
New Orleans, Louisaina, October 31, 1865.

COLONEL: I have the honor, by the direction of the major general commanding, to say that he has decided to retain possession of the wharves at posts 26, 27, and 28, until the conditions of the agreement with Captain Norton, assistant quartermaster, are complied with on the part of the city, and that he has notified the bureau of streets and landings accordingly.

I am further directed to say that you will instruct your subordinates not to make any arrangement with the city authorities without first submitting them for the general's approval.

Very respectfully, your obedient servant,

ALFRED FREDBERG,
Assistant Adjutant General.

Colonel S. B. HOLABIRD,
Chief Quartermaster Department Louisiana, New Orleans, Louisiana.

HEADQUARTERS DEPARTMENT OF LOUISIANA,
New Orleans, Louisiana, November 9, 1865.

[SPECIAL ORDERS No. 110.—Par. 5.]

Under the authority of instructions from the War Department, Colonel S. B. Holabird, chief quartermaster Department of Louisiana, is appointed a member of the joint commission for selecting such portions of the wharf and levee space in the port of New Orleans as may be required for the purposes of the War, Navy, and Treasury Departments.

The commission will consist of Acting Rear-Admiral H. K. Thatcher, United States Navy, appointed by the Secretary of the Navy; Hon. William P. Kellogg, collector of the port of New Orleans, appointed by the Secretary of the Treasury; Colonel S. B. Holabird, additional aide-de-camp, United States Army, and chief quartermaster Department of Louisiana. First Lieutenant H. W. Wheeler, Eighty-first United States Colored Infantry, is appointed recorder of the commission.

The acting mayor of New Orleans is requested to invite the city surveyor to attend the sessions of the commission, in order to give such information in the interests of the city as may be desired.

The commission will determine its own hours and place of sitting, and the Quartermaster's Department will furnish a room for the office purposes of the commission.

By order of Major General E. R. S. Canby.

WICKAM HOFFMAN,
Assistant Adjutant General.

Official:

NATHANIEL BURBANK,
First Lieutenant, Acting Assistant Adjutant General.

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Proceedings of a joint commission, composed of an officer of the War, Navy, and Treasury Departments, for the purpose of selecting and designating the wharf and levee space in the city of New Orleans that will be required for the use of their departments.

[Extract.]

NEW ORLEANS, LOUISIANA,
November 22, 1865.

The commission met pursuant to adjournment.

Present: Colonel S. B. Holabird, aide-de-camp, United States Army; Commander Edward Simpson, United States Navy; First Lieutenant Henry W. Wheeler, Eighty-first United States Colored Infantry, recorder.

Hon. W. P. Kellogg, commissioner appointed to represent the Treasury Deparment, was unable, from sickness, to attend.

A communication was addressed to George R. Bayley, esq., city surveyor, requesting his attendance before the commission.

A copy of the communication sent to Mr. Bayley, together with his reply, is appended to this record, and marked A.

The non-attendance of the city surveyor rendering it impossible to state accurately the extent and locality of the levee space now used by the Government, the commission submit the following as a general description:

The levee and wharf space now occupied for Army purposes are as follows:

1st. The levee and wharf at foot of Saint Andrew, Saint Mary, and Celeste streets.

2d. One hundred and fifty feet, commencing fifty feet from custom-house landing.

3d. The levee and wharf between Julia and La Fayette streets, and the space occupied by the railway and depot along the entire levee.

4th. Posts 39 to 43, and post 58.

5. Posts 26, 27, 28, 45, 46, and 60.

It is recommended that the wharves and landings now occupied for Army purposes be relinquished to the city authorities during the time of peace, so soon as they can be vacated, upon condition that no interest of the Government shall be prejudiced thereby; and that in case of foreign war or civil disturbance, rendering these wharves and landings again necessary for military purposes, their occupation and use shall be resumed, and that all leases for a term of years, and all contracts concerning the wharves and landings, shall be made subject to the above conditions.

The space occupied by the Navy consists of about five hundred feet front, at foot of Erate street, in front of the Reading Press, embracing three wharves, two of which are comparatively new, and were reconstructed at the expense of the Navy Department.

For the use of the Navy there will be required the levee space and two of the wharves now occupied by that branch of the service until the ammunition, coal, and other stores now in the Reading Press, and which may arrive from the Mississippi squadron, shall be removed; after which time it is recommended that the wharves and levee spaces now occupied by the Navy be relinquished to the city of New Orleans with this proviso, viz: That the Navy Department shall retain the right, at any time of foreign war or civil commotion, to resume the possession of the space now occupied, the Navy Department being the judge of the exigency requiring the re-possession; and further, that the right of the Navy Department to so reclaim such wharves and levee spaces shall be distinctly set forth in all leases of this property.

The space occupied by the Treasury Department comprising one wharf at foot of Esplanade street in the neighborhood of the mint.

It is required to retain the wharf and levee space for the use of the Department.

The commission adjourned to meet at 10 o'clock a. m. to-morrow.

NEW ORLEANS, LOUISIANA, *November* 23, 1865.

The commission met pursuant to adjournment.

Present: Hon. W. P. Kellogg, Colonel S. B. Holabird, aide-de-camp, United States Army; Commander Edward Simpson, United States Navy; First Lieutenant Henry W. Wheeler, Eighty-first United States Colored Infantry, recorder.

The recommendations made by the several members of the commission will result in time of peace in relinquishing in time of peace to the city of New Orleans all the wharf property and levee space included in the city with the exception of one wharf now occupied by the Navy Department, and the Government property in front of the mint, but the commission consider it expedient that a space should be permanently held for the General Government. It therefore recommends that a levee space be permanently retained by the Army, Navy, and Treasury Departments, conjointly, consisting of one thousand feet front, commencing at the Third District ferry, foot of

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Elysian Fields street, and extending in a direction up the river; such space to be secured free of wharfage or other city dues.

This space will include a portion of ground in front of the mint, already in possession of the General Government, as well as the wharf now in use of the Treasury Department, and considered necessary for the use of that Department.

It is recommended that this reserved space be divided between the several Departments, each erecting such wharves and sheds as may be deemed necessary.

The commission, in selecting this site for permanent occupation, is actuated by a desire to avoid as much as possible interfering with the commerce of the city. At this point there is but one wharf now occupied by the Treasury Department, and but little business is transacted in the neighborhood.

The idea of connection of three branches of the Government at the mint, commends itself as an advantage in providing for mutual support in case of commotion.

There being no further business before it, the commission adjourned *sine die*.

W. P. KELLOGG,
Collector of the Port of New Orleans.
S. B. HOLABIRD,
Colonel and Aide-de-camp, United States Army.
E. SIMPSON,
Commander, United States Navy.
HENRY W. WHEELER,
First Lieut. Eighty-first U. S. C. Infantry, Recorder of the Commission.

A.

OFFICE JOINT COMMISSION ON WHARVES AND LEVEES,
New Orleans, Louisiana, November 22, 1870.

SIR: Your presence is requested by the joint commission on wharves and levees, for the purpose of giving information on points necessary to its proceedings. You will please provide accurate plans of the wharves and levees that may be now in your possession.

Very respectfully,

E. SIMPSON,
Commander, U. S. Navy, for the Commission.

MR. BAYLEY,
City Surveyor, New Orleans, Louisiana.

SURVEYOR'S OFFICE,
CITY OF NEW ORLEANS, LOUISIANA,
November 22, 1865.

SIR: I have the honor to acknowledge the receipt of your communication of this date, requesting my presence at a meeting of the joint commission on wharves and levees, and to provide accurate plans of the wharves and levees that may be now in my possession. His honor the mayor has ordered me to decline the attendance requested, which I beg respectfully to state; but the plans in my office are subject to your examination at any time.

I am, very respectfully, your obedient servant,

G. W. R. BAYLEY,
City Surveyor.

E. SIMPSON, Esq.,
Commander, U. S. Navy, on Joint Commission on Wharves and Levees.

OFFICE DEPOT QUARTERMASTER,
NEW ORLEANS, LOUISIANA,
September 27, 1869.

Respectfully returned to Brevet Brigadier General Fred. Myers, Chief Quartermaster Department of Louisiana.

There are no records in this office relative to the matter within complained of.

From information derived of reliable sources, the following statement is believed to be correct:

Previous to the evacuation of this city by the rebel forces in 1862, most of the

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wharves along the levee were destroyed. Subsequently, the military authorities, by direction of General Butler, expended some $500,000 in repairing the levees and wharves and restoring them to their former condition. During the same year a board of officers in connection with the city authorities set apart a portion of the levee for Government use, whose proceedings are believed to be on file in the Department at Washington. Previous to the removal of the naval depot to Algiers, the inclosure within referred to was occupied by the United States Navy. It cannot now be given up without great detriment to the service.

E. J. STRANG,
Brevet Lieutenant Colonel and Assistant Quartermaster, U. S. A.

OFFICE CHIEF QUARTERMASTER DEPARTMENT OF LOUISIANA,
New Orleans, September 28, 1869.

Respectfully forwarded for the orders of the Quartermaster General United States Army, as to whether the within-named wharf shall be given up on the notification of the mayor of the city. Attention is respectfully invited to the report hereon of Brevet Lieutenant Colonel E. J. Strang, Assistant Quartermaster.

FRED. MYERS,
Brevet Brigadier General, and Chief Quartermaster Department of Louisiana.

QUARTERMASTER GENERAL'S OFFICE,
October 14, 1869.

Respectfully returned to Brevet Brigadier General Fred. Myers, chief quartermaster New Orleans, with request that he will please make some recommendation as to the wharf herein referred to.

By order of the Quartermaster General:

J. J. DANA,
Brevet Brigadier General and Quartermaster.

OFFICE CHIEF QUARTERMASTER DEPARTMENT OF LOUISIANA,
New Orleans, October 20, 1869.

Respectfully returned to the Quartermaster General United States Army.

In view of the fact that the wharves of this city were rebuilt during the war at the expense of the United States Government, and of the great usefulness of a wharf to the Quartermaster's Department, it is recommended that this wharf be retained by the Government, and the right to hold it contested in the proper courts if necessary.

FRED. MYERS,
Brevet Brigadier General, and Chief Quartermaster Department of Louisiana.

Indorsement on communication from John R. Conway, mayor of the city of New Orleans, dated September 20, 1869, stating: That during the military occupation of the city, the United States took possession of and inclosed a portion of the levee front in the 1st district, New Orleans, that the United States still retains possession of the property, and the inclosure remains and is an obstruction to commerce, and it should be removed by the law which provides that the levee must be kept free and unobstructed for commercial uses. Requests early attention to the matter.

OFFICE CHIEF QUARTERMASTER DEPARTMENT OF LOUISIANA,
New Orleans, Louisiana, September 20, 1869.

Respectfully referred to Brevet Lieutenant Colonel E. J. Strang, assistant quartermaster, for a full report of all circumstances attending the seizure and holding of this wharf. This paper to be returned.

FRED. MYERS,
Brevet Brigadier General, and Chief Quartermaster Department of Louisiana.

OFFICE CHIEF QUARTERMASTER DEPARTMENT OF LOUISIANA,
New Orleans, Louisiana, September 20, 1869.

SIR: Your communication of this date, relative to the wharf now used by the United States Government in the 1st district of this city, has been received. In reply, I have the honor to inform you that the matter will be referred to Washington, D. C., for the decision of the War Department.

Very respectfully, your obedient servant,

FRED. MYERS,
Deputy Quartermaster General, Brevet Brigadier General, U. S. A.

Hon. JOHN R. CONWAY,
Mayor of New Orleans, New Orleans, Louisiana.

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DEPARTMENT OF IMPROVEMENTS,
New Orleans, December 7, 1870.

I am directed by the council to call upon you to remove the fence at the wharf where the Alliance line of steamers make their landing.

Trusting that the removal will cause you no inconvenience, I am yours, truly,

J. R. WEST,
Administrator.

Colonel E. J. STRANG, *Assistant Quartermaster.*

OFFICE DEPOT QUARTERMASTER,
New Orleans, Louisiana, December 7, 1870.

Respectfully referred to Lieutenant Colonel F. Myers, Deputy Quartermaster General, United States Army, New Orleans, Louisiana, for his information and action.

E. J. STRANG,
Captain and Assistant Quartermaster, Brevet Lieutenant Colonel, U. S. A.

OFFICE DEPUTY QUARTERMASTER GENERAL, UNITED STATES ARMY,
IN CHARGE OF DEPOT AT NEW ORLEANS,
New Orleans, Louisiana, December 8, 1870.

SIR: In reply to your communication of 7th instant, asking that the fence inclosing the Government wharf in this city be removed, I have the honor to state that I am without authority to remove the structure referred to, the Department at Washington having instructed me to retain possession of the wharf-space until further orders.

I deem it proper to notify you that the wharf is retained by the United States in accordance with an understanding with the corporate authorities of the city, the United States having made extensive repairs to the wharves of the city, for which no reimbursement has ever been made.

Regretting I cannot comply with your request, I am, sir, very respectfully, your obedient servant,

FRED. MYERS,
Deputy Quartermaster General, U. S. A.

Hon. J. R. WEST,
Administrator Department Improvements, New Orleans, Louisiana.

DEPARTMENT OF IMPROVEMENTS,
New Orleans, December 12, 1870.

DEAR SIR: I have the honor to acknowledge the receipt of your communication of the 8th instant.

As there is no record in this Department of any terms made by the city for the occupancy by the United States Government of the landing-space in question, I would be obliged to you for such information on the subject as your Department is possessed of.

Yours, very truly,

J. R. WEST,
Administrator.

General FREDERICK MYERS,
Deputy Quartermaster General.

OFFICE DEPUTY QUARTERMASTER GENERAL, UNITED STATES ARMY,
IN CHARGE OF DEPOT AT NEW ORLEANS,
New Orleans, Louisiana, December 27, 1870.

SIR: I have been informed that an officer of the police department has been placed in charge of the Government wharf-yard foot of Calliope street, in this city.

As there is contained on the premises property for which this Department is accountable, I have to request to be informed by what authority such trespass on the rights of the United States has been committed, and to demand the immediate withdrawal of this official from the premises.

Please give me immediate reply, and oblige, very respectfully, your obedient servant,

FRED. MYERS,
Deputy Quartermaster General, U. S. A., in charge Depot.

Mr. A. S. BADGER,
Superintendent Metropolitan Police, New Orleans, Louisiana.

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[Indorsement.]

OFFICE SUPERINTENDENT METROPOLITAN POLICE,
New Orleans, December 27, 1870.

Respectfully referred to Captain William McCann, harbor precinct, who will at once return this document, with indorsement, relative to the matter within referred to.
By order:

A. S. BADGER,
Superintendent Metropolitan Police.

P. H. BOYLE, *Secretary.*

METROPOLITAN POLICE,
OFFICE CAPTAIN HARBOR PRECINCT,
New Orleans, December 27, 1870.

Respectfully returned with following information: That no officer of this precinct has been placed in charge of Government yard, head of Calliope street. If an officer of any other precinct has been placed in charge of said yard, this office has not been apprised to that effect.

W. McCANN,
Captain Harbor Precinct.

OFFICE SUPERINTENDENT METROPOLITAN POLICE,
New Orleans, Louisiana, December 28, 1870.

Respectfully returned to General Frederick Myers, Deputy Quartermaster General, United States Army, in charge of depot, with the information that no officer of this department has been placed in charge of the Government yard, head of Calliope street.

A. S. BADGER,
Superintendent Metropolitan Police.

[Telegram.]

NEW ORLEANS, *December 27, 1870.*

General M. C. MEIGS, *Quartermaster General U. S. A., Washington, D. C.:*

The city authorities have placed a police officer in charge of the yard at the Government depot here. I have called on the commanding officer at Jackson Barracks for a detachment of soldiers to protect the fence and property. Please give instructions in the matter.

FRED. MYERS,
Deputy Quartermaster General, United States Army.

[Telegram.]

WASHINGTON, D. C., *December 28, 1870.*

Deputy Quartermaster General MYERS:

Consult district attorney; obey the laws; report in detail to General Halleck.

M. C. MEIGS,
Quartermaster.

NEW ORLEANS, LOUISIANA, *January 27, 1871.*

COLONEL: I have the honor to request that you furnish me with any information in your possession relative to the occupation of the wharf space at the head of Calliope street, in this city, by the United States. There is but little of record remaining in this office, beyond the proceedings of a board composed of the Army, Navy, and Treasury Departments, of which you were a member.

It is supposed the property was taken possession of as a reimbursement, in part, for the repairs made to the wharves of the city by the United States, after the evacuation of the city by the rebels.

The city authorities are now making efforts to obtain possession, and papers bearing on the case will doubtless be called for. Captain G. A. Norton, whose residence is not known to me, may be able to give important information on the subject, as he was at one time, while on duty in this city, in charge of water transportation, in consultation with municipal authorities here relative to wharf reservations, and made some sort of

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agreement in the matter. Should you know his whereabouts, please communicate with him.

Very respectfully, your obedient servant,

FRED. MYERS,
Deputy Quartermaster General, U. S. A., in charge of Depot.

Lieutenant Colonel S. B. HOLABIRD,
Chief Quartermaster Department of the Dakota, Saint Paul, Minnesota.

HEADQUARTERS DEPARTMENT OF THE COLUMBIA,
Portland, Oregon, February 20, 1871.

SIR: Colonel Holabird has referred to General Canby your letter of January 27, ultimo, regarding the wharf space at the head of Calliope street, and I am instructed to advise you that the same has been forwarded to the Adjutant General of the Army, where the records are now deposited.

Very respectfully, sir, your obedient servant,

LOUIS V. CAZIARC,
First Lieutenant Second Artillery, A. A. A. G.

Colonel FREDERICK MYERS,
Deputy Quartermaster General, Depot Quartermaster New Orleans, La.

OFFICE DEPUTY QUARTERMASTER GENERAL,
IN CHARGE OF DEPOT AT NEW ORLEANS.
New Orleans, Louisiana, January 27, 1871.

COLONEL: I have the honor to request that you furnish me with any information in your possession relative to the occupation of the wharf space at the head of Calliope street, in this city, by the United States. There is but little of record remaining in this office beyond the proceedings of a board composed of the Army, Navy, and Treasury Departments, of which you were a member.

It is supposed the property was taken possession of as a reimbursement in part for repairs made to the wharves of the city by the United States, after the evacuation of the city by the rebels.

The city authorities are now making efforts to obtain possession, and papers bearing on the case will doubtless be called for. Captain G. A. Norton, whose residence is not known to me, may be able to give important information on the subject, as he was at one time, while on duty in this city, in charge of water transportation, in consultation with municipal authorities here relative to wharf reservations, and made some sort of agreement in the matter. Should you know his whereabouts please communicate with him.

Very respectfully, your obedient servant,

FRED. MYERS,
Deputy Quartermaster General, United States Army, in charge of Depot.

Lieutenant Colonel S. B. HOLABIRD,
Chief Quartermaster Department of the Dakota, Saint Paul, Minnesota.

The following are the indorsements:

OFFICE CHIEF QUARTERMASTER DEPARTMENT OF DAKOTA,
Saint Paul, Minnesota, February 2, 1871.

This paper is respectfully referred to Brigadier General E. R. S. Canby, commanding Department of Columbia, Portland City, Oregon, under whose direction this matter was adjusted during the war.

A survey of the wharves occupied by the Government was made, and plans of the same were duly submitted to the division commander, General Canby, and, without doubt, the entire subject is a matter of record in the War Department. It appears to me that if this communication has in view the protection of the interests of the Government in this matter, that it should be referred to the adjutant general of the Army. Captain Norton served under me, and, in my opinion, he can have no official information that can be of much value to protect the Government not already placed upon record and available for that purpose. Captain Norton was one of several officers who had, in succession, the water transportation.

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I believe that the city government was a party to the arrangement made at the time, and I further believe that it was the understanding that the arrangement and distribution of the wharves should be of perpetual obligation.

I have not the orders nor the records of the case.

S. B. HOLABIRD,
Deputy Quartermaster General, U. S. A.,
Chief Quartermaster Department of Dakota.

HEADQUARTERS DEPARTMENT OF COLUMBIA, *February* 21, 1871.

Respectfully forwarded to the adjutant general of the Army. All the records that relate to this case are, I presume, in the War Department at Washington.

E. R. S. CANBY,
Brigadier General, U. S. A.

ADJUTANT GENERAL'S OFFICE, *Washington, March* 22, 1871.

Respectfully referred to the Quartermaster General, that he may transmit to the depot quartermaster at New Orleans the inclosed copies of papers from the records of this office, bearing upon the subject in question, if deemed necessary.

Copy of the proceedings of the commission convened by inclosed order is not furnished, as it appears to be on file in the office of the depot quartermaster, New Orleans, Louisiana.

E. D. TOWNSEND,
Adjutant General.

OFFICE DEPUTY QUARTERMASTER GENERAL,
IN CHARGE OF DEPOT AT NEW ORLEANS,
New Orleans, Louisiana, March 15, 1871.

(*Through Headquarters Military Division of the South.*)

GENERAL: I have the honor to forward herewith copies of all papers in my possession relative to the occupation by the United States of certain wharf space in this city.

Of the various sections of wharf space selected in 1865 by the joint committee composed of officers of the Army, Navy, and Treasury Departments, the control of all has been relinquished by the United States, and the city authorities reinstated in possession, except the space at the head of Calliope street, which is still held by the United States, and occupied by the Quartermaster's Department as a Government yard, and from its central location and advantages it will be impossible to give up the property without serious detriment to the interests of this Department.

It is thought that the records of the War Department may contain important information relative to expenditures made by the United States for repairs to the wharves partially destroyed by the rebels on their evacuation of this city; no record thereof is on file here.

As the city is still endeavoring to obtain possession of the property, I have to request early instructions in the case.

Very respectfully, your obedient servant,

FRED. MYERS,
Deputy Quartermaster General, United States Army, in charge of Depot.

Brigadier General M. C. MEIGS,
Quartermaster General, U. S. A., Washington, D. C.

[Indorsement.]

HEADQUARTERS MILITARY DIVISION OF THE SOUTH,
CHIEF QUARTERMASTER'S OFFICE,
Louisville, Kentucky, March 29, 1871.

Respectfully returned to the division commander. I do not think there is any particular necessity for retaining this wharf property at New Orleans, Louisiana, for the use of the Quartermaster's Department, at least not after the stores now at that depot are sent elsewhere. When this is done I recommend that the depot be broken up. I think it would be advisable to hold the property until that time, and then restore it to the city on such terms as the authorities at Washington deem just to the interests of the United States.

J. C. McFERRAN,
Deputy Quartermaster General, U. S. A.,
Chief Quartermaster Military Division of the South.

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HEADQUARTERS MILITARY DIVISION OF THE SOUTH,
Louisville, Kentucky, March 30, 1871.

Transmitted by order of Major General Halleck.

ROBT. N. SCOTT,
Captain Third Artillery, Aide-de-camp.

QUARTERMASTER GENERAL'S OFFICE, *April* 5, 1871.

Respectfully submitted to the honorable Secretary of War. The letters of General Canby indicate that the United States held the wharf property by right of capture; that the United States expended much money in improving the wharfage at New Orleans—all of which that could be destroyed by fire was burned by the rebels before the United States took possession; that this title has been maintained since, and is now disputed. The property is still held by the United States, is valuable, is useful to the United States, and should not be given up if the law or superior authority does not decide against the right to retain it.

M. C. MEIGS,
Quartermaster General, Brevet Major General, U. S. A.

Concurred in by the Secretary of War, April 12, 1871.

ED. SCHRIVER,
Inspector General.

QUARTERMASTER GENERAL'S OFFICE, *March* 19, 1872.

True copies:

M. I. LUDINGTON,
Quartermaster, U. S. A.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a Senate resolution of February 9, 1872, information relative to the estimated cost of improving the navigation of Red River at or near Tone's Bayou.

MARCH 25, 1872.—Ordered to lie on the table and be printed.

WAR DEPATRMENT, *March* 22, 1872.

The Secretary of War has the honor to comply with the requirements of the resolution of the United States Senate of the 9th ultimo, by transmitting to that body herewith such information touching the estimated cost of improving the navigation of Red River at or near Tone's Bayou, as could be compiled from a hasty examination of that river and the obstructions in it. The estimate of twenty-five thousand dollars ($25,000) for the improvement, submitted by the engineer officer reporting on the matter, is only approximate, and may be the subject of a slight modification when a more matured plan has been perfected and is submitted.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 21, 1872.

SIR: In compliance with the following resolution of the Senate of the United States of February 9, 1872, viz, "That the Secretary of War be directed to transmit to the Senate any information in his Department showing the estimated cost of improving the navigation of Red River at or near Tone's Bayou," I beg leave to transmit a copy of a report on the subject from Captain C. W. Howell, Corps of Engineers, dated March 13. It will be seen that the officer in charge desires to make further examination and survey before submitting a matured plan for the improvement, but presents an approximate estimate for closing Tone's Bayou (which can only be done at very low water) of $25,000.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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UNITED STATES ENGINEER'S OFFICE, NEW ORLEANS, LA.,
March 13, 1872.

GENERAL: In compliance with instructions contained in Department letter dated February 14, 1872, directing me to transmit all information attainable regarding the "cost of improving the navigation of Red River at or near Tone's Bayou," I have the honor to submit a report on the subject just received from First Lieutenant E. A. Woodruff, Corps of Engineers, who has recently conducted a survey of Tone's Bayou and vicinity.

By taking the statements of Red River pilots and of other persons professing a knowledge of Red River and Tone's Bayou, I should have been able to transmit a report at an earlier date. I considered this mode, however, unreliable and thought it best to await Lieutenant Woodruff's report.

I have the honor to be, very respectfully, your obedient servant,

C. W. HOWELL,
Captain of Engineers, U. S. A.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

SHREVEPORT, LOUISIANA,
February 19, 1872.

CAPTAIN: * * * Tone's Bayou is an outlet of Red River, about thirty miles by river below Shreveport, through which a part of the Red River water flows into Bayou Pierre, and a series of shallow lakes on the right of the main river. The water thus escaping returns to Red River partly through Bayou Winsey, near Grand Ecore, and partly through Bayou Perry, above Natchitoches. Up to 1850, Tone's Bayou was a very insignificant outlet, but at that time a planter, named J. B. Gilmer, having a tax dispute with the city of Shreveport, conceived the idea of injuring the city by enlarging the bayou to the injury of the navigation above Bayou Pierre.

To effect this purpose, he caused the trees bordering the then narrow stream to be killed by girdling, expecting that the current would produce caving banks and enlargement of the bayou as soon as the banks were deprived of their natural protection. For several years the bayou was, at ordinary stages of the river, a fordable stream, but it gradually increased, constantly diminishing the volume of water sent down the river, and therefore causing the capacity of the crooked river below (between Tone's Bayou and Loggy Bayou) to diminish, making the caving of its banks less, and allowing the growth of a fringe of willows, which aided still further to diminish its capacity.

The first effort to stop the increasing flow of Tone's Bayou was made in 1863, under the immediate supervision of Dr. T. P. Hotchkiss, then confederate provost marshal of this district. At this time the channel known as Scopinis Cut-off was made by Dr. Hotchkiss, with levies of negro laborers. This channel was dug, from below, to a depth of 5 feet below water surface, the river being at a very low stage. Its width was 30 feet. In this excavation a mass of old raft was cut through. The soil was the red earth which gives the river water its peculiar color, and very tenacious. The sides of the cut were vertical.

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This cut being opened, an attempt was made to build a levee or dam of earth across Tone's Bayou just below its departure from the bed of the river. The dam was completed, but a sudden rise on a Sunday, when the laborers were not at work, swept it entirely away. Scopinis Cut-off continued to enlarge, and was used as a steamboat channel.

At the time of Banks's Red River expedition a levee was made by the confederate authorities across the old river, (at the bottom of the loop,) to reduce the water of Red River by increasing the flow into Tone's Bayou. A large confederate gun-boat, built at Shreveport, was loaded with earth and placed in readiness to be sunk across Scopinis Cut-off in case of the success of the Federal fleet in getting above the sunken steamer "New Falls City" at the mouth of Loggy Bayou. Scopinis Cut-off was not closed, and is at present the only steamboat channel of Red River at this point, the levee across the bend of the old river remaining above ordinary stages of water. At the beginning of the present survey of the Raft Region and obstructions in Red River, my attention was particularly called to the effect of the depletion of the river by Tone's Bayou. I therefore directed Mr. Calhoun, in charge of this division of the work, to make an accurate survey of the river, with transit and level lines from the beginning of the series of bends above Tone's Bayou to the foot of Scopinis Cut-off, with a survey of the bend of the old river from which Tone's Bayou departs, and a survey of the bayou to Bayou Pierre. Also a survey of the region along the line marked "Proposed cut-off," (not my proposition,) with a series of cross-sections, soundings, and velocity observations in the river to furnish data for computation of discharge of the river above, below, and in Tone's Bayou.

A tracing from a rough plat of Mr. Calhoun's survey is transmitted herewith, but I regret to state that the reduction of his notes discovers such omissions and inaccuracies that I can refer to them with confidence for only a few general results or approximations.

It will, however, require but a few days—a week, perhaps—of good weather, to enable me, with one of the two parties still employed, to check and correct Mr. Calhoun's notes and supplement the information they furnish. There are no levees on the banks of that part of the river shown in the tracing, the banks being generally above ordinary overflow. Hodge's plantation front is above highest high water, but the opposite side is subject to high overflows. In low water the bends shown above Tone's Bayou are somewhat obstructed by snags, and several boats have been sunk in the narrow river of the first bend, and near "Devil's Elbow." Just below Devil's Elbow, on the left bank, are several bayous, one, "Lay's Bayou," of considerable size; at the time of the survey, about eighty feet wide and twenty feet deep. These flow toward, and eventually into, Lake Bisteneau, whence the water returns to the river by Loggy Bayou. No other outlets or inlets are found on either hand till we reach Tone's Bayou. Here (at the head of Scopinis Cut-off) the current of the river strikes the point of the island, and divides itself unequally between Tone's Bayou and the cut-off. At least three-quarters of the water, at the present stage, (about eight feet above low water,) passes into the bayou; and that this proportion is yearly increasing there is the best evidence. That the change will, if allowed to continue, run the navigation of Red River above Loggy Bayou, hardly admits of a doubt. It is only a question of time, and the change seems going on too rapidly to require many years to attain the result. To prevent this evil interested persons have devised various plans. The most obvious plan is to dam Tone's Bayou either completely or in part.

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Another plan contemplates an extensive cut-off along the dotted line on the map. It is probable that this would endanger the complete turning of the river into Flat River, Red Chute Bayou, and the Lake Bisteneau region, which would be a strong additional objection to the general ones to cut-offs. A more detailed survey of this line should be made, and the survey of the river extended down to Loggy Bayou, to obtain sufficient data to estimate the effect of the whole or partial closing of Tone's Bayou upon the river and plantations below, as well as to determine the height to be given to a partial dam, should one be considered necessary. The banks of Tone's Bayou are about eleven or twelve feet high, on both sides, at the present stage. It is, therefore, possible to close Tone's Bayou completely against the highest overflow; but this would require a levee from the west end of the dam to the high front of Hodge's plantation, and from the east end, along the old river, for a distance not yet determined. In highest overflows the water of Red River formerly ran over its banks into Bayou Pierre, across the lower part of Eagan's plantation, east of Tone's Bayou. Having endeavored to avoid forming an opinion as to the best plan to meet the requirements of the case till I should have gathered all the information available, both from the survey and from testimony—the result of long acquaintance with the river—and hoping also to extend the survey, should there be means for that purpose, I am not prepared to furnish accurate estimates, nor am I ready to decide in favor of any particular plan. Should there be no means to complete the survey of the river below Scopinis to Loggy Bayou, it might be reasoned that, as the river, before 1850, did find room for its waters, without the aid of Tone's Bayou, it should be made to do so again. My approximate estimate of the sum required to close Tone's Bayou completely, by an earth levee, (which can be done only at very low water,) is $25,000. A dam built to allow the higher overflows to waste into Bayou Pierre would be much more expensive, as great care would be necessary in its construction to prevent washing of the very soluble soil.

Timber could be procured in the swamps above Shreveport, and stone in sufficient quantity from the bluffs of Bayou Pierre, but no plan or estimate for such a work can be hurriedly made. I beg leave, however, to submit an estimate for the completion of the survey to Loggy Bayou, the importance of which need not be enlarged upon. Estimating the distance by river of Loggy Bayou from Scopinis at 50 miles, (by Marcotte's map of the parishes of Caddo, Claiborne, Natchitoches and part of Rapides,) and estimating the progress at two miles a day in good weather, one month would probably suffice for the completion, under the direction of either of the energetic assistants at present retained on the survey of the Raft Region. Could the work be resumed about the first of March there would be no extra expense for outfit and organization of parties, and the following estimate for one month would give the total expense:

Two assistants, one month, at $150 each	$300 00
One rodman, one month, at $100	100 00
One rodman, one month, at $75	75 00
Two oarsmen, one month, at $40	80 00
One cook, one month, at $40	40 00
Seven men; total pay-roll	595 00
Provisions for 7 men, one month, at $1 per day each	217 00
Contingencies 10 per cent	81 20
Total	893 20

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Should no more funds be available, the present appropriation for the survey of Red River will be made to complete the survey of the Raft Region in the manner indicated in your letter of January 22, and also to perfect Mr. Calhoun's work in that part of the river shown in the accompanying tracing.

I remain, very respectfully, your obedient servant,

E. A. WOODRUFF,
First Lieutenant, U. S. Engineers.

Captain C. W. HOWELL,
United States Engineers, New Orleans, La.

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LETTER

FROM THE

ACTING SECRETARY OF THE INTERIOR,

COMMUNICATING,

In compliance with a Senate resolution of March 26, 1872, information in relation to the lands in Louisiana granted to said State in aid of the New Orleans, Opelousas and Great Western Railroad.

APRIL 4, 1872.—Referred to the Committee on Public Lands and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., April 4, 1872.

SIR: In compliance with the Senate resolution of the 26th ultimo, I have the honor to transmit the report of the Commissioner of the General Land-Office, of the 2d instant, in relation to "the lands in the State of Louisiana granted to said State in aid of the New Orleans, Opelousas and Great Western Railroad, by an act approved June 3, 1856, and which were declared forfeited to the United States by act approved July 14, 1870."

I am, sir, very respectfully, your obedient servant,

B. R. COWEN,
Acting Secretary.

Hon. SCHUYLER COLFAX,
Vice-President, and President of the Senate.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND-OFFICE,
Washington, D. C., April 2, 1872.

SIR: I have the honor to acknowledge the receipt of referred Senate resolution of 26th ultimo, calling upon the Secretary of the Interior "to transmit to the Senate any information showing what action, if any, has been taken regarding the lands in the State of Louisiana granted to said State in aid of the New Orleans, Opelousas and Great Western Railroad by act approved June 3, 1856, and which were declared forfeited to the United States by act approved July 14, 1870." In answer, I respectfully report the following:

1. For the purpose of issuing the necessary instructions to the district land officers in Louisiana, this office, on the 17th August, 1870, (copy herewith,) requested the governor to furnish a list with the proper certificate attached thereto, descriptive of the tracts disposed of by said State.

2. On the 5th of May, 1871, this office again called upon the governor (copy herewith) to furnish the desired list.

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3. In response to this second letter, the governor directed his secretary, O. D. Bragdon, esq., June 14, 1871, to acknowledge its receipt and furnish a copy of letter from the State register, stating what action had been taken in conformity with the act of the general assembly of Louisiana, approved 31st May, 1871, (copies herewith,) from which it appears said State register had made arrangements to procure the lists of sale and plats by said State.

The above is all the information that has reached this office.

With great respect, your obedient servant,

W. W. CURTIS,
Acting Commissioner.

Hon. C. DELANO,
Secretary of the Interior.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND-OFFICE,
August 17, 1870.

SIR: By the act of Congress approved 14th July, 1870, entitled "An act to declare forfeited to the United States certain lands granted to the State of Louisiana to aid in constructing a railroad therein," copy herewith inclosed, which applies to the grant made to said State June 3, 1856, for the New Orleans, Opelousas and Great Western Railroad.

In view of issuing the necessary instructions to the district land officers for the disposal of such lands which have not been disposed of by the State under said grants, I have the honor to request to be furnished with a list, and the necessary certificates attached thereto, descriptive of the tracts so disposed of by the State of Louisiana, and which are embraced in the certified schedules furnished the governor October 8, 1859, and January 29, 1861, giving all the particulars of sale and date, by whom and to whom made, and under what authority.

Very respectfully, your obedient servant,

JOS. S. WILSON,
Commissioner.

His Excellency H. C. WARMOTH,
Governor of Louisiana, New Orleans, Louisiana.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND-OFFICE,
Washington, D. C., May 5, 1871.

SIR: I have the honor to invite your attention to our communication, dated 17th August last, copy herewith, requesting list and the necessary certificate to be attached thereto, descriptive of the tracts disposed of by the State of Louisiana along the line and limits of the New Orleans, Opelousas and Great Western Railroad, in order to issue the necessary instructions to the district land officers to restore such lands declared forfeited to the United States by the act of Congress approved July 14, 1870.

Your early attention to the matter is respectfully requested.

Very respectfully, your obedient servant,

WILLIS DRUMMOND,
Commissioner.

His Excellency H. C. WARMOTH,
Governor of Louisiana, New Orleans, Louisiana.

STATE OF LOUISIANA, EXECUTIVE DEPARTMENT,
New Orleans, June 14, 1872.

SIR: I am directed by his excellency the governor to acknowledge the receipt of your communication of May 5, and to inclose a copy of a communication received at this office from the register of State lands, in answer to your letter of above date, referred to him for information.

Very respectfully

O. D. BRAGDON,
Private Secretary.

Hon. WILLIS DRUMMOND,
Commissioner General Land-Office, Washington, D. C.

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STATE LAND-OFFICE OF LOUISIANA,
New Orleans, June 14, 1871.

SIR: I have the honor to inform you that I have received a letter from Commissioner of the General Land-Office, which was referred to this office with a request for information in regard to the disposal of lands within the grant to the New Orleans, Opelousas and Great Western Railroad Company.

I have made arrangements to procure the lists of sale and plats representing them, in accordance with sec. 10 of act No. 104 of the general assembly, approved May 31, 1871.

Very respectfully,

HUGH J. CAMPBELL,
Register.

His Excellency H. C. WARMOTH,
Governor of Louisiana.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

ACCOMPANYING

Information called for by a Senate resolution of January 18, 1872, in relation to the correspondence which has passed between the governments of the United States and Great Britain relating to the dues now collected in the latter country from merchant-shipping for the support of light-houses and beacons.

APRIL 5, 1872.—Referred to the Committee on Commerce and ordered to be printed.

To the Senate of the United States:

In answer to the resolution of the Senate of the 18th of January last, relating to British light-house dues, I transmit herewith a report from the Secretary of State, and the documents which accompanied it.

U. S. GRANT.

WASHINGTON, *April* 2, 1872.

DEPARTMENT OF STATE,
Washington, April 2, 1872.

The Secretary of State, to whom was referred the resolution of the Senate of the 18th of January last, requesting the President, if the public interest shall allow, to communicate to that body "the correspondence which has passed between the Government of the United States and Great Britain relating to the dues now collected in the latter country from merchant-shipping for the support of light-houses and beacons, with a view to renewing the application of our own Government, at the proper time, for the relief of the shipping interest from these charges, and for the maintenance of the light-house system of Great Britain from the public revenue, in accordance with the policy and practice of the Government of the United States, which has lighted its coasts and harbors for the free use of the ships of all nations," has the honor to lay before the President a copy of the papers mentioned in the subjoined list, which contain all the information on the records or files of this Department called for by the resolution.

Respectfully submitted.

HAMILTON FISH.

The PRESIDENT.

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List of accompanying papers.

Mr. Lawrence to Mr. Clayton, No. 47, 26th April, 1850, with an accompaniment.
Mr. Webster to Mr. Lawrence, No. 38, 3d October, 1850, (extract.)
Mr. Lawrence to Mr. Webster, No. 84, 24th October, 1850, (extract.)
Same to same, No. 93, 3d January, 1851, with accompaniments.
Same to same, No. 95, 10th January, 1851, with an accompaniment.
Same to same, No. 99, 7th February, 1851, (extract.)
Same to same, No. 100, 14th February, 1851, (extract) with accompaniments.
Same to same, No. 102, 21st February, 1851, (extract,) with an accompaniment.
Same to same, No. 206, 30th September, 1852, (extract.)

Mr. Lawrence to Mr. Clayton.

No. 47.] LEGATION OF THE UNITED STATES,
London, April 26, 1850.

SIR: I have the honor to inclose a copy of a note from Lord Palmerston, in reply to one addressed to him on the subject of a light-house in Niagara River. I have before brought this subject to the consideration of Her Majesty's government, and it was referred to the governor general of Canada. A copy of the note I then received was sent to you.

In connection with this permit me to call your attention to the fact that this government still maintains the tax upon our vessels for the support of light-houses. This is a serious matter to our navigating interest, and, it appears to me, should, under the existing relations between the two countries, be abolished. If I am instructed to call upon this government to abolish the light-dues upon American vessels, I will enter upon the work without delay, in the hope of accomplishing the object. I have already spoken to the president of the board of trade on the subject. In case you should send instructions, I will thank you to give me the history of our system, expenses, number of light-houses, extent of coast, and such other facts as I might find useful in pressing the matter upon the British government.

I have the honor to be, very respectfully, sir, your obedient servant,
ABBOTT LAWRENCE.

Hon. JOHN M. CLAYTON,
Secretary of State, Washington, D. C.

[Inclosure.]

Mr. Palmerston to Mr. Lawrence.

FOREIGN OFFICE, *April* 24, 1850.

SIR: I have the honor to acknowledge the receipt of your letter of the 17th inst. respecting the erection of a light-house on Horse-Shoe Reef, in Niagara River, and I have to state to you that your letter has been communicated to Her Majesty's secretary of state for the colonial department, for his lordship's consideration.

I have the honor to be, with high consideration, sir, your most obedient, humble servant,
PALMERSTON.

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Mr. Webster to Mr. Lawrence.

[Extract.]

No. 38.] DEPARTMENT OF STATE,
Washington, October 3, 1850.

SIR: * * * * * * I have caused to be procured from the Fifth Auditor, who is the general superintendent of the Light-House Establishment of the United States, the information you ask for in your No. 47, respecting the history of our system, its expenses, number of lights, &c. It will be found in a report of the Committee on Commerce of the House of Representatives, dated May 25, 1842, and other printed papers; two copies of which are herewith transmitted. A careful examination of them will show that the Light-House Establishment of the United States, in point of usefulness, extent, efficiency, and economy, will compare favorably with that of any other country. You are authorized to call the attention of Her Majesty's government to the subject, and to the fact that British vessels are not liable in United States ports to any tax for the support of light-houses. It would, therefore, be but a simple act of justice, on the part of Great Britain, to reciprocate this liberal policy; and you are accordingly requested to ask that the exaction of light-dues from vessels of the United States trading with British ports may, in future, be dispensed with.

You would do well, before entering upon this negotiation, to peruse the parliamentary papers which have from time to time been published relating to the subject of light-houses, &c.; and I would especially refer you to the volume entitled "Report from the Select Committee on Light-houses, together with the Minutes of Evidence, Appendix and Index," ordered by the House of Commons to be printed, 1st of August, 1845, in which the committee, after mature consideration, say that they are of opinion, and distinctly recommend to that body, that all expenses for the erection and maintenance of light-houses, floating-lights, buoys, and beacons, on the coast of the United Kingdom, be henceforth defrayed out of the public revenue.

* * * * * * *

I am, sir, respectfully, your obedient servant,
DANIEL WEBSTER.

ABBOTT LAWRENCE, Esq., *&c., &c., &c.*

[Extract.]

No. 84.] *Mr. Lawrence to Mr. Webster.*

UNITED STATES LEGATION,
London, October 24, 1850.

SIR: * * * * * * My thanks are due to yourself, as also to Mr. Pleasanton, for the information furnished respecting our light-house system, with which I shall endeavor to make myself acquainted at an early day. I shall not fail to examine, also, the parliamentary papers, generally, to which you refer, and particularly the report of the 1st of August, 1845, before availing myself of the authority you have given me "to call the attention of Her Majesty's government to the subject."

Very respectfully, your obedient servant,
ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

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Mr. Lawrence to Mr. Webster.

No. 93.] LEGATION OF THE UNITED STATES,
London, January 3, 1851.

SIR: In obedience to the instructions contained in your No. 38, I have, after the preparation you suggested, addressed a note to Lord Palmerston, setting forth the injustice of the present system of light-dues in the United Kingdom upon the commerce of the United States, and have now the honor to inclose a copy of the same. Upon investigation I find this tax to be much larger than I had anticipated, and I have, under your instructions, requested its entire abolition as an act of simple justice toward the United States.

Our citizens now contribute annually toward the support, not of the lights, but of the light-house *system* of the United Kingdom, about one hundred and fifty thousand dollars, and this amount is constantly increasing from the extension of our commerce. Of the large revenue derived from British light-houses, (last year it amounted to four hundred and eighteen thousand pounds,) but a small part is expended in maintaining lights. The rest is devoted to other and very different purposes. This government can, if it pleases, purchase every light-house, buoy, and beacon, in the United Kingdom, and abolish a tax the burden of which falls with peculiar force upon the commerce of the United States, since we give the use of our lights upon coasts, rivers, and lakes, the largest in the world, to competing nations without charge. The construction of new light-houses in the United States must be continued, and the expenses of maintaining them must increase year by year. I venture to suggest to your consideration the expediency, in case Great Britain continues the present tax upon our vessels for the use of lights, and in view of giving our own ships the benefit of our free system, that similar measures be adopted on our part toward all countries that will not reciprocate our liberal policy. I hope, however, that Her Majesty's ministers will view the question in a light that will produce changes sufficient to satisfy our reasonable demands.

I have the honor to be, sir, very respectfully, your obedient servant,
ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

[Inclosure.]

Mr. Lawrence to Mr. Palmerston.

UNITED STATES LEGATION,
138 *Piccadilly, December* 31, 1851.

The undersigned, envoy extraordinary and minister plenipotentiary of the United States of America, has the honor, under instruction from his Government, to invite the attention of Viscount Palmerston, Her Majesty's principal secretary of state for foreign affairs, to the subject of the light-dues exacted of the mercantile marine of the United States entering the ports of the United Kingdom.

It is nearly two years since Her Majesty's government determined to respond to the invitation of the United States made to the world many years ago, and recommended Parliament to repeal the prohibitory navigation laws of the kingdom, and the commerce of the two nations has been conducted for now just one year on the reciprocal basis established in accordance with such recommendation. The United States asked Great Britain to carry out this principle—to establish reciprocity in fact as well as in name, to do justice to the commerce of the United States.

The light-houses, floating-lights, buoys, and beacons on the whole sea and lake coast and rivers of the United States, were constructed and are maintained by the Federal

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Government, an annual appropriation being made by Congress for these objects. No light-dues of any kind are levied, either on vessels of the United States or on ships of foreign nations. In the year 1792 there were but ten lights in the Union. In the year 1848 there were two hundred and seventy light-houses, thirty floating lights, a thousand buoys, besides numerous fixed beacons. There are probably at this time, including those under construction on the Pacific coast, more than three hundred light-houses, with a proportionate number of floating-lights, buoys, &c., &c., all of which are given to the use of the world by the United States, without tax or charge.

The commerce of the United States is not met with a corresponding liberality in the ports of the United Kingdom. The reciprocity intended to be established by the navigation law of last year, and so much to be wished for between the two greatest commercial nations of the globe, will not be realized if American tonnage continues subjected to onerous light-dues in Great Britain, while British vessels enjoy, without pay, the lights, &c., upon the coasts of the United States.

The undersigned is not unaware that the system of light-dues in this country is somewhat complicated. But he believes that, as reforms have been made in many other laws and customs, adopted in former ages, under a different state of society, so changes can be made in these, adapting them more to the present condition of the world, and to the liberal policy of other nations.

In illustration of the onerous and unequal operation of the present system of lights in Great Britain upon American commerce, the undersigned has the honor to ask Viscount Palmerston's attention to a few examples.

The American mail-steamers entering at Liverpool pay for light-dues the sum of sixty-two pounds (£62) for each voyage. If the British steamers were subjected to the same charge in American ports, it would amount annually to the great sum of thirty-two hundred and twenty-four pounds, (£3,224.) Two steamers, the Washington and Hermann, running from New York to Bremen, and touching on the way at Southampton, paid, last year, light-dues to the amount of eight hundred pounds, (£800,) including the charges for the Heligoland Light, which, the undersigned is informed, they have never seen. The steamer Franklin, running between New York and Havre, and touching at Cowes, but without anchoring, merely to land its mails, has been subjected to light-dues, which have been paid by order of Trinity House, but under protest of the consignees. One commercial house in New York, running sixteen ships between that port, Liverpool, and London, paid, last year, for such dues, twenty-four hundred ninety-eight pounds, three shillings, and sixpence, (£2,498 3*s.* 6*d.*) Another American shipping house paid for lights, in 1849, the sum of twenty-two hundred and fifty two pounds, (£2,252.)

The undersigned will not multiply individual examples of the amount of this tax. The number of American ships that entered the ports of the United Kingdom for the nine months ending October 1, 1850, was six hundred and two, (602,) with a tonnage of four hundred and seventy-three thousand nine hundred, (473,900.) If one-fourth be added for the last quarter of the year, the total will be seven hundred and fifty-two (752) ships, and about six hundred thousand tons, being an average of nearly eight hundred (800) tons to each ship. Assuming this calculation to be substantially correct, it appears from the trade-list that three thousand nine hundred and nine (3,909) American vessels have entered the ports of the United Kingdom in the last four years, with a tonnage of two millions four hundred and twenty-two thousand four hundred and ninety-two, (2,422,492.) During the last ten years the number of American vessels entered in the United Kingdom has been seventy-eight hundred and seventy-two, (7,872,) with an aggregate of four million six hundred and eighty-one thousand nine hundred and twenty-five (4,681,925) tons.

The light-dues are not the same in all the ports of the United Kingdom. The rate at Liverpool is tenpence halfpenny, (10½*d.*,) or elevenpence, (11*d.*,) whereas in London the charge is thirteenpence (13*d.*) per ton. If the average is taken at one shilling (1*s.*) per ton, a ship of eight hundred (800) tons would pay forty pounds, (£40,) and seven hundred and fifty-two (752) ships, with six hundred thousand (600,000) tons register, would pay about thirty thousand pounds, (£30,000,) or one hundred forty-six thousand dollars ($146,000) annually; and it is not probable that the amount of tonnage will decrease in coming years. Thirty-nine hundred and nine (3,909) American ships must have paid, with a tonnage of two millions four hundred and twenty-two thousand four hundred and ninety-two, (2,422,492,) the sum of one hundred and twenty-one thousand pounds, (£121,000,) or nearly six hundred thousand dollars, ($600,000.) And within ten years last past the shipping of the United States has contributed upon seven thousand eight hundred and seventy two (7,872) vessels, the aggregate tonnage of which was four millions six hundred and eighty-one thousand nine hundred and twenty-five, (4,681,925,) the immediate sum of two hundred and thirty-four thousand pounds, (£234,000,) or over one million one hundred thousand dollars, ($1,100,000,) for the support of the light-house system of the United Kingdom.

During the last year there appears to have been levied upon the shipping of the world for light-dues, in the United Kingdom, between four and five hundred thousand pounds.

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Of this one-fourteenth part was paid by citizens of the United States, while the British subjects, with a fleet doubtless equally large in the ports of the United States, have not been taxed at all for the maintenance of lights. The Government of the United States, in view of its own liberality, is justifiable in asking Her Majesty's government to do away with this great inequality, and remove this restriction on commerce.

The undersigned believes that no other nation levies so heavy a tax upon ships in the form of light-dues as this. There are in the United States many more light-houses, &c., &c., than in the United Kingdom. Yet the annual appropriation for the construction of new, the repair of old light-houses, and the maintenance of both, does not equal one-fifth of the annual amount raised for this purpose in the United Kingdom by the tax on the shipping coming into its ports.

In conclusion, the undersigned, on behalf of his Government, expresses the wish that Her Majesty's government may take this grave subject into consideration; that it may speedily set free American shipping from so unequal and so onerous a restriction; that it may complete its great measures for commercial freedom, and may thus increase still more the intercommunication which is already producing so happy results.

The undersigned avails himself of this opportunity to renew to Viscount Palmerston the assurances of his distinguished consideration.

ABBOTT LAWRENCE.

Viscount PALMERSTON, *&c., &c., &c.*

Mr. Lawrence to Mr. Webster.

No. 95.] UNITED STATES LEGATION,
London, January 10, 1851.

SIR: I have the honor to inclose a copy of a note from Lord Palmerston, dated the 7th instant, acknowledging the receipt of my note on the subject of the light-dues, and to be, very respectfully, sir, your obedient servant,

ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

[Inclosure.]

Mr. Palmerston to Mr. Lawrence.

FOREIGN OFFICE, *January* 7, 1851.

The undersigned, Her Majesty's principal secretary of state for foreign affairs, has the honor to inform Mr. Lawrence, envoy extraordinary and minister plenipotentiary from the United States of America at this court, that he has received and has referred to the proper department of Her Majesty's government the note which Mr. Lawrence addressed to the undersigned on the 31st ultimo, relative to the light-dues which are levied on American shipping in the ports of the United Kingdom.

The undersigned has the honor to renew to Mr. Lawrence the assurances of his highest consideration.

PALMERSTON.

ABBOTT LAWRENCE, *&c., &c., &c.*

Mr. Lawrence to Mr. Webster.

[Extract.]

No. 99.] LEGATION OF THE UNITED STATES,
London, February 7, 1851.

SIR: * * * * * * *

I have just received from the Foreign Office a reply to my note on the subject of light-dues. Her Majesty's government declines abolishing

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them on the ground of want of power. I shall send a copy by the steamer of next week.

I have the honor to be, sir, very respectfully, your obedient servant,
ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

Mr. Lawrence to Mr. Webster.

[Extract.]

No. 100.] LEGATION OF THE UNITED STATES,
LONDON, *February* 14, 1851.

SIR: * * * * * * *

I have also the honor to inclose herein the reply of this government relative to the imposition of light-dues upon the tonnage of the United States within the ports of the United Kingdom, together with my reply to the same, which I hope will be approved by the President. I do not despair of obtaining an amelioration of this heavy tax upon our commerce, as the ship-owners of the United Kingdom have again taken up the question and mean to press it upon the consideration of Parliament. It is an extraordinary circumstance that only about one-third of the amount of light-dues levied in the United Kingdom is expended in the support of the light-house establishment. The whole system is entirely wrong, and ought not to exist in a country professing to exhibit for imitation an example of the advantages of reciprocity in matters of navigation. I thought it just to ourselves that the question should be brought to the consideration of this government; and wise to present at this time the difference between the British and American systems, as it may hereafter be of consequence in the conduct of future negotiations.

I have the honor to be, sir, very respectfully, your obedient servant,
ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

[Inclosure.]

Mr. Palmerston to Mr. Lawrence.

FOREIGN OFFICE, *February* 6, 1851.

The undersigned, Her Britannic Majesty's principal secretary of state for foreign affairs, has the honor to inform Mr. Lawrence, envoy extraordinary and minister plenipotentiary of the United States of America at this court, that Her Majesty's government has had under its consideration the note which Mr. Lawrence addressed to the undersigned on the 31st of December, complaining that heavy light-dues are levied on American shipping in the ports of the United Kingdom, while no dues of the same kind are charged upon British ships frequenting the ports of the United States; and Mr. Lawrence says that he is instructed by his Government to request that measures may be taken in order that American vessels may enjoy in British ports, in regard to exemption both from light-dues and from other similar charges, the same advantages which British vessels enjoy in the ports of the United States.

In reply, the undersigned has the honor to state that the difference between the treatment of British vessels in American ports and that of American vessels in British ports in regard to light-dues, is a consequence of the difference which exists between the system on which coast lights are maintained in the United States, and the system on which such lights are maintained in the United Kingdom. In the United States the

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coast-lights are erected and maintained by the Federal Government, and the expenses connected with those lights form part of the general expenditure of that Government. The Federal Government, therefore, has a right to determine whether it shall reimburse itself for this outlay by levying light-dues upon shipping; or whether, on the whole, it may not be more for the advantage of the United States, and more conducive to the commercial prosperity of the nation, that this charge should be borne by the public revenue, and that the commerce of the Union should be freed from any burden in the shape of light-dues upon vessels frequenting the ports of the Union. The Government of the United States having power to decide this question, has determined, wisely as Her Majesty's government think, as well as liberally, to free the commerce of the Union from any burden on this account, and to defray out of the national revenue the actual cost of erecting and of maintaining the coast-lights.

If the coast-lights of the United Kingdom had been established upon the same principle, and if they had been erected and were maintained at the public expense, and if they were managed and administered by a department of the state, it is possible that Her Majesty's Government might think that it would be best for the general interests of the nation that the system of the United States in regard to these matters should be adopted in this country, and that the commerce of the United States should be relieved from the burden of light-dues.

But the British government has not the power to deal with this matter as it pleases. The various lights which are established round the coasts of the United Kingdom have been erected and are maintained by various corporate bodies, and those corporate bodies are entitled by patents and by acts of Parliament to levy certain dues upon shipping in order to raise the necessary income for paying interest on the capital laid out in the construction of the lights, and for providing the means requisite for defraying the expense of maintaining those lights. Her Majesty's government have no right or power to order these corporate bodies to abstain from levying these dues; and these dues could not be made to cease unless Parliament was to vote such sums as would be necessary to buy up for the public the interest which the private parties concerned have in these lights, nor unless Parliament were at the same time to authorize the government to abolish light-dues for the future, and were to charge upon the public revenue the expense of maintaining the lights.

The expediency of adopting such a course has indeed from time to time been suggested, but the question has not hitherto been considered with a view to any practical decision.

Her Majesty's government, however, cannot admit that the difference which exists between the system which prevails in the United States and that which subsists in Great Britain in regard to coast-lights, has the effect of infringing upon that principle of commercial reciprocity between Great Britain and the United States which forms the basis of the treaty of 1815. It is no part of the engagements of that treaty that the internal system and local arrangements of the two countries upon commercial matters shall be the same. But the principle distinctly laid down in the second paragraph of the first article of the treaty of 1815 is, that the vessels of each country shall, in the ports of the other, be treated in regard to duties and charges in the same manner, and on the same footing, as national vessels; and this stipulation is strictly observed in regard to the light-dues which are levied upon American vessels in British ports, for no other or higher light-dues are levied in those ports upon American vessels than are levied in those ports upon vessels belonging to the United Kingdom.

But if the British light-dues cannot be deemed to be any infringement of the principle of reciprocity which forms the basis of the treaty of 1815, neither can they be considered as in any degree conflicting with the liberal principle upon which the present navigation law of Great Britain is founded. For that navigation law relates to the admission of foreign ships into British ports with certain goods on board, and coming from certain voyages, which goods and voyages would, before the passing of that law, have involved an exclusion from a British port; but that law has no reference to light-dues or harbor-dues, nor does it make any mention of such matters, and it cannot, therefore, be appealed to as requiring for its complete execution that any change should be made in such matters.

Her Majesty's government are quite ready to discuss with the Government of the United States any question which may arise in regard to any supposed incompleteness in the mutual application of that principle of reciprocity in matters of navigation which is contained in the act 12 and 13 Vict., cap. 29; but willing and desirous as they are to carry out the provisions of that act to the fullest extent with respect to all countries which are disposed, as the United States have declared themselves to be, to pursue a similar course, yet Her Majesty's government cannot admit the force of arguments founded upon a constructive application of that law, to matters which are wholly beyond the range of its enactments.

The undersigned requests Mr. Lawrence to accept the assurance of his highest consideration.

PALMERSTON.

ABBOTT LAWRENCE, *&c., &c., &c.*

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[Inclosure.]

Mr. Lawrence to Mr. Palmerston.

UNITED STATES LEGATION,
138 *Piccadilly, February* 12, 1851.

The undersigned, envoy extraordinary and minister plenipotentiary of the United States of America, has the honor to acknowledge the receipt of the note of Viscount Palmerston, Her Britannic Majesty's principal secretary of state for foreign affairs, of the 6th instant, in reply to the former note of the undersigned to Lord Palmerston on the subject of the imposition of light-dues on the tonnage of the United States within the ports of the United Kingdom, and will not fail to transmit a copy to his Government by the earliest opportunity.

The undersigned avails himself of this occasion to correct an error into which Her Majesty's government seem to have fallen with reference to the request made by the undersigned on behalf of the Government of the United States on this subject.

The Government of the United States is not unaware of the difference between the system on which coast-lights are maintained in the United States and the system on which such lights are maintained in the United Kingdom. On the contrary, the undersigned alluded to that difference in the former communication he had the honor to make to Viscount Palmerston with reference to them. That fact does not, however, diminish the pressure of this tax upon the shipping of the United States, and, while the undersigned disclaims all intention of discussing the particular mode by which the lights of the United Kingdom are maintained, he still cherishes the hope that there is nothing in that system to prevent the changes for which his Government has asked.

The Federal Government does not rest this request on the provisions of the convention of 1815. Lord Palmerston justly says that "It is no part of the engagements of that treaty that the internal system and local arrangements of the two countries upon commercial matters shall be the same."

Neither does it seek to view the present navigation law of the United Kingdom as liberating the commerce of the United States from this tax. Were that the case, there would have been no occasion to instruct the undersigned to make the communication of the 31st of December last.

The Federal Government rests this request solely on the fact that the commerce of Great Britain enjoys without charge the lights, beacons, and buoys maintained by the United States on a coast several thousand miles in extent, while the commerce of the United States is heavily taxed for the support of similar lights, beacons, and buoys in the United Kingdom. In view of this fact it asks Her Majesty's government to meet the liberality of the United States with a reciprocal liberality; and as an additional reason for granting the request it points to the present commercial policy of the two nations, founded, professedly, on the principle of reciprocity; and it invites Her Majesty's government to extend the principle still further, and treat the commerce of the United States as liberally as the United States treats the commerce of the United Kingdom.

The undersigned trusts that no question will arise in regard to any supposed incompleteness in the mutual application of that principle of reciprocity in matters of navigation contained in the act 12 and 13 Vict., cap. 29, to render necessary the discussion for which Viscount Palmerston expresses the readiness of Her Majesty's government.

The undersigned has great pleasure in learning that the expediency of adopting such a course as that of the United States has been from time to time suggested, and renews the expression of the hope that Her Majesty's government may devise some way to remove or to lighten this burden which now falls so heavily on the commerce of the United States.

The undersigned requests Viscount Palmerston to accept the assurance of his distinguished consideration.

ABBOTT LAWRENCE.

VISCOUNT PALMERSTON, *&c., &c., &c.*

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Mr. Lawrence to Mr. Webster.

[Extract.]

No. 102.] LEGATION OF THE UNITED STATES,
London, February 21, 1851.

SIR: * * * * * * *

I have also the honor to inclose a note from Lord Palmerston, acknowledging the receipt of my second note on the subject of light-dues.

* * * * * * * *

I have the honor to be, sir, very respectfully, your obedient servant,
ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

[Inclosure.]

Mr. Palmerston to Mr. Lawrence.

FOREIGN OFFICE, *February* 15, 1851.

The undersigned, Her Majesty's principal secretary of state for foreign affairs, has the honor to inform Mr. Lawrence, the United States minister at this court, that he has received and referred to the proper department of Her Majesty's government the note which Mr. Lawrence addressed to the undersigned on the 12th instant, relative to the light-dues which are levied on American shipping in the ports of the United Kingdom.

The undersigned has the honor to renew to Mr. Lawrence the assurance of his highest consideration.

PALMERSTON.

ABBOTT LAWRENCE, Esq., *&c., &c., &c.*

Mr. Lawrence to Mr. Webster.

[Extract.]

No. 206.] LEGATION OF THE UNITED STATES,
London, September 30, 1852.

SIR: * * * * * * *

In accordance with instructions from the Department, I urged upon this government the propriety of the abolition or reduction of the dues for the construction and maintenance of light-houses. The application was not successful, but at the same time it was not met by a positive refusal. And I am not without hope, since other foreign powers, as well as British ship-owners, are united with us, that at an early day a way will be found for effecting this reform. Though the Department has not noticed my efforts, I have not failed to bear the subject constantly in mind.

The light-house on the Bahamas for which I was instructed to ask has not yet been granted. I have, from time to time, urged it upon the government, in interviews, and I think they will decide to erect it.

* * * * * * * *

I have the honor to be, sir, your obedient servant,
ABBOTT LAWRENCE.

Hon. DANIEL WEBSTER,
Secretary of State, Washington, D. C.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 58.

LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a Senate resolution of February 28, 1872, information concerning the Presidio Military Reservation, near San Francisco.

APRIL 11, 1872.—Ordered to lie on the table and be printed.

WAR DEPARTMENT, *April* 10, 1872.

The Secretary of War has the honor to answer the resolution of the United States Senate of the 28th of February, requesting information as to the number of acres contained in the Presidio Military Reservation, near San Francisco; how much of the same is needed for military purposes, and how much the portion not needed is worth, by inviting attention to the inclosed report of the Chief of Engineers, which answers as much in detail as possible the above inquiry.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 8, 1872.

SIR: In reply to the Senate resolution of the 28th of February, 1872, concerning the Presidio Military Reservation, I have the honor to report that the reservation contains 1,541 acres; that for the sole and exclusive use of the permanent fortifications at and about Fort Point, an extent of 300 acres is needed; that for the sole and exclusive use of the military establishments of the Presidio Barracks, about 100 acres are needed. The remainder of the reservation is not needed for immediate military uses, but will be required whenever war is actual or imminent, for earthworks and temporary fortifications to defend the rear of the open batteries at Fort Point.

This Department has not the information upon which it can base any accurate valuation of the lands of this military reservation. It is stated in a report of the board of engineers for the Pacific coast, dated February 9, 1870, that the whole reservation is worth two or more millions of dollars.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 59.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report and estimates of the Chief of Engineers in relation to the Falls of Saint Anthony.

APRIL 15, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *April* 13, 1872.

The Secretary of War has the honor to present to the United States Senate and House of Representatives, a communication from the Chief of Engineers of the 11th instant, who, referring to his annual report for 1871, in which it is stated that the estimate for continuing the work for the preservation of the Falls of Saint Anthony would depend upon the results of surveys and examinations then in progress, now submits copy of a report from Colonel J. N. Macomb, engineers, whose estimate is $200,000.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 11, 1872.

SIR: In my annual report for 1871, it was stated that the estimate for continuing the work for the preservation of the Falls of Saint Anthony would depend upon the results of surveys and examinations then in progress, and I now beg leave to transmit a copy of a report, based upon these surveys, just received from Colonel J. N. Macomb, Corps of Engineers, the officer in charge of the work.

Colonel Macomb presents a new project for preserving the falls, by building a wall on the upper end of and in contact with the sandstone strata, to protect them from further destructive action of the river currents. The estimated cost of the projected construction is $200,000.

It is respectfully suggested that the report be sent to the Senate and House of Representatives, it being in continuation of my last annual report.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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ROCK ISLAND, ILLINOIS, *April* 5, 1872.

GENERAL: At the time of making my annual report in September, 1871, it was understood that a new estimate for the preservation of the Falls of Saint Anthony would be presented, based upon the results of a survey then in progress.

I beg leave now to present a report from my assistant, Mr. Franklin Cook, civil engineer, who has had the local charge of the works at that point.

I send, at the same time, two sheets of tracings of the maps of the survey and project. The one being a map (on a scale of 200 feet to an inch, or $\frac{1}{2400}$,) of the vicinity of the Falls of Saint Anthony, and of the river for some four miles above the falls. The other sheet gives (on a scale of 20 feet to the inch, or $\frac{1}{240}$,) a plan showing details of head of limestone ledge, and of river bottom above the natural barrier, and of our work in the way of coffer-dams and permanent wall, that has been executed at the breaches into the head of the tunnel; this sheet shows also the site of proposed wall at the head of the ledge, with sections or profiles, (vertical scale 4 feet to an inch, or $\frac{1}{48}$,) and an exhibit of the result of the boring showing the stratification to a depth of 148 feet.

This survey, with the experience of the last season shows, I think, the proper method to be pursued in the future works for the preservation of the falls, and indicates the plan for protecting the natural barrier which is proposed in the within report. The success of this plan, after all, must depend upon keeping in good repair the protecting *apron* on the lower side of the natural barrier—a work which has been chiefly constructed by the owners of the water-power on the two sides of the river; and the condition of that work, when I last saw it, was such as to impair my confidence in its permanency, a consideration which causes me great misgiving in presenting this project, especially as to the eventual cost of the works which may become necessary for the preservation of the Falls of Saint Anthony.

I remain, very respectfully, your most obedient servant,

J. N. MACOMB,
Colonel of Engineers, United States Army.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

MINNEAPOLIS, MINNESOTA, *November* 28, 1871.

COLONEL: In closing up my work this season I have the honor to submit to you the following report of work carried on by me under your directions for the preservation of the Falls of Saint Anthony.

On the 14th of April last I received your orders to commence and carry forward the work, begun last season, of closing up the gorge through which the water broke into the tunnel, at the foot of Nicollet Island, and build a coffer-dam from the east side of Nicollet Island, to join the old Saint Anthony Dam, 120 feet east of where the coffer-dam was joined to the same last fall.

This dam, 430 feet in length, I completed about the middle of May. I then commenced clearing out the *débris* from the gorge at the place I had left to cross with my permanent wall of masonry. My pump worked well, and kept the pit clear, and everything worked favorably till I had reached within 2 feet of the bottom of the gorge, when a leak commenced in the pit that I was excavating for my wall. It came through the soft stratum of sand near the bottom of the gorge; the water com-

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ing in under the coffer-dam, and appeared to pass through among the loose stone in the bed of the river, and increased to such an extent as to prevent me from prosecuting my work at that place. I at once filled up the place I had opened, and commenced filling out on the earth embankment, inclosing the coffer-dam around the head of the gorge, to close the leak.

The water appeared to be so diffused, passing through the broken stone forming the bed of the river over which the coffer-dam and embankment were built, that I was not able to determine the exact place where the water came under the dam.

I extended the embankment on the outside into the river and up stream from 60 to 100 feet, lapping it on the limestone ledge about 35 feet. On top of the embankment I piled up broken stone 5 feet high, making a very heavy, and, it seemed to me, secure protection against any further breaking in of water from the river.

I then commenced clearing the *débris* out of a section 50 feet long at the lower end of the first break, intending to go down to the bottom at that place and build a wall of masonry across the gorge, and puddle up a sufficient distance to make a secure dam, then go back and commence at the head of the gorge and make another effort to clear it out and put in my wall of masonry, having the above wall for protection in case of accident. After getting this place cleared out to within about 2 feet of the bottom, the water broke in, coming along in the bottom on the westerly side of the gorge. I at once tried to find the place where the leak came in under the head of the coffer-dam, and, after examining the bed of the river two days, I found a place about 20 feet outside of my embankment inclosing the coffer-dam. The usual depth of water in this place was 14 feet, while, for a space of about 3 feet across, the water was 20 twenty feet deep. I at once ran out an embankment from the one built previously, and, in closing over this deep place, the leak stopped, so that there was much less water running through the tunnel than at any previous time. It appears that this leak occurred by the water coming in under a stratum of the sandstone under the embankment, thus preventing the material in the embankment from falling in to choke up the place through which the water passed.

After closing up the leak, as above stated, I commenced clearing away that part of the timber coffer-dam above the head of the ledge, and removed the earth embankment immediately above it, so that I might get down to the sandstone under which the water had found its way into my works. I cleared away a space 110 feet out in the stream from where I was intending to put in my permanent wall of masonry, still leaving sufficient embankment outside for a good substantial coffer-dam. After clearing away all of the material down to the sandstone that had formed the bed of the river, and removing the *débris* from the gorge as low down as I could go without pumping out the water, which was standing in the gorge 7 feet deep, I then determined to clear out a section of the gorge, and chamber into the sandstone on either side to where it was solid. On the up-stream side of this place which I cleared out, I dredged the loose material out of the gorge, and excavated chambers in the sandstone on each side down to the water, then bored out the sand with six-inch augers, cutting out the interstices with a large chisel made for that purpose. These trenches were carried down to the hard layer of sandstone which formed the bottom of the gorge. This work was very slow and tedious. I opened these trenches 10 inches wide and 50 feet long. I then filled them up, and the section across the gorge, connecting them with a concrete wall to the surface of the

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water, making the concrete part of my wall 7 feet high, and then built up 4 feet of stone masonry on top of it, bringing the wall up even with the top of the sandstone on the sides of the gorge, leaving a gap on top of the concrete wall, through which the water might pass that I had cut off, which had been coming in through the sides of the old gorge.

After getting the wall completed, I put my pump in the gorge below this last wall, and drew the water down and cleaned out the *débris* and sandstone to the bottom of the gorge; this sandstone having been undermined by the water passing underneath it, making it necessary for me to make my excavation 40 feet wide to clear out to where the sandstone was solid. I then filled up this section with clay and gravel-puddle, having it thoroughly tamped down as the filling progressed. After getting this cleared out and partly filled up, I commenced clearing out the gorge at the place I had left to put in my permanent wall of masonry to join the walls already commenced. I had successfully cleared out the *débris* to the bottom of the gorge, and commenced the foundation of the main wall in the hard stratum which forms the bottom of it. In clearing the *débris* out of this section of the gorge, I found that the sandstone on the northerly side of the gorge had been undermined, so that it became necessary to clear out a section 30 feet wide in order to get a good foundation for my main wall. I also excavated a trench in the sandstone on the southerly side of the gorge, so that I might put in a wing-wall to prevent the water from finding its way around the end of my main wall. After getting in about 20 feet I struck a small cavity, through which the water had evidently passed. It was at this time nearly dry. I continued building up the foundation of my main wall, intending to get that as high as the ledge, and then extend my wing-wall out across this last cavity.

At this time, the 16th day of September, a new stream of water started in from the river through this last-found cavity, discharging through my trench which I had excavated to the cavity from my main wall, discharging out over the foundation that I had already laid in the gorge, which at this time was five feet high. This stream was about 2½ feet deep, by 2 feet wide, where it came out of the trench I had excavated for my wing-wall. I found that this leak came in from the river on the outside of the embankment which I had extended out to close the leak that occurred the last of June. I at once laid my track, and commenced putting in gravel, and in about a week succeeded in shutting out the water, and again resumed my regular work of building up my main wall and making the fill above it. This work I have continued, and now, this 23d day of November, have completed the main wall across the gorge, and have the embankment above it well protected with riprap, and joined coffer-dam to wall on the southerly side of the gorge.

The foregoing is a report of work as carried on at the head of the original break into the Nicollet Island tunnel. In addition to the above, I have carried on the following work, in accordance with your instructions when you were here last July, to meet the new state of affairs caused by the break into the tunnel, which occurred on the night of the 3d of July. The new break commenced near the center of the channel, between Nicollet Island and the Saint Anthony shore of the Mississippi River, at the head of the ledge, thence passing along, under the ledge, in the bed of the river, entering the old tunnel immediately under the foot of Nicollet Island, at about the same point where the first break entered it. I at once got my men together and built a dam from the head of Nicollet Island to Boom Island, which turned all of the water

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into the main channel of the river on the westerly side of Nicollet Island, leaving the Saint Anthony mill-pond dry, and revealing the break under the ledge, making a chasm about 18 feet wide and about 8 feet deep from the ledge to the *débris* in the bottom.

Another new feature in the case is, that the lower end of the old tunnel became so choked up that the water forced its way out into the river on the westerly side of Hennepin Island, coming out under the ledge about 50 feet below the apron. The outlet is about the same width as the inlet. I immediately notified you of the new break; and received an answer that you would be in Minneapolis in a few days. Upon your arrival, a few days later, I received instructions from you to surround this new break with a substantial timber coffer-dam, and clear out the *débris* from, and put a bulkhead of masonry across, the head of the gorge, and, at the same time, to clear the *débris* out above the bulkhead-wall a sufficient distance to make a good puddle-wall.

By the 31st of August I had built a coffer-dam around the break high enough to keep out ordinary water, and in good condition to raise high enough to stand against a freshet, if it should come. I commenced building the dam on the easterly side of Nicollet Island, 130 feet above the head of the ledge in the bed of the river, extending it out into the river at nearly right angles to the shore-line of the island 190 feet, then turned nearly a right angle, running down stream 145 feet to the head of the ledge, then extending on top of the ledge 150 feet in nearly the same line as the last, then extending it 270 feet and joined on to the northeasterly corner of the dam built last spring from Nicollet Island to the old Saint Anthony dam, making a total of 755 feet of coffer-dam built on account of the last break in the Saint Anthony mill-pond. I had also cleared out the east side of the bed of the river, from the Saint Anthony shore to the coffer-dam and the space covered by the coffer-dam, extending it from the ledge up-stream 160 feet, and had given it a good bed of puddle, well paved and riprapped up even with the top of the limestone ledge. I also cleared out the *débris* from the upper end of the gorge, and so up, including most of the space inclosed by the coffer-dam above the head of the ledge, and had built a wall across the head of the gorge, and extended wing-walls out into the sandstone from the main wall easterly 20 feet and westerly toward Nicollet Island 84 feet, and had sloped out the sandstone at the head of the gorge above the wall, and filled up with puddle 9 feet deep, so that it was nearly level with the average of the sandstone in the bed of the river above, making it ready for the last coat of puddle, paving, and riprap. The amount of money expended on account of the above-described work was $15,000.

On the last day of August the citizens' committee were organized and ready to go to work; and I turned over the work in the Saint Anthony mill-pond to them, in the condition as above described, and gave my entire attention to closing up permanently the head of the gorge on the westerly side of Nicollet Island, as described in the first part of this report.

When you were here in July last, and had observed the difficulties that attended our work, on account of the leaks into our excavations that were being made for the purpose of clearing the *débris* out of the gorge to receive the permanent walls and filling, you directed me to make a careful survey of the bed of the river to ascertain the location of holes in the bed of the river through which the water might come under the upper stratum of sandstone; also to extend my surveys up stream far enough to ascertain if there was any hard foundation in the river above, where it would be feasible to build a dam in case the falls should go out.

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I extended my surveys up as far as the north line of section 3, township 29, range 24, west of the fourth principal meridian, 4.07 miles from the Falls of Saint Anthony, and made examinations eight miles further up stream to Coon Rapids.

I also made borings in the sandstone to ascertain the depth and character of the sandstone formation.

I have noted the result of my soundings and borings on the accompanying maps. It will be seen that next below the limestone ledge there is a stratum of clay and shale 2 feet thick. This stratum is impervious to water. Next below the clay there is about 4 feet of sandstone that is quite hard, from the infiltration of alumina and carbonate of lime from the stratum above. Then there is about 2 feet of sandstone marked with oxide of iron. The next 6 feet below is white sandstone, made up of thin layers and not homogeneous. Between this and the next stratum (which is quite hard) there is a thin seam of very soft sand with scarce any adhesion of its particles. The next 6 feet is hard, and withstands the washing of water or atmospheric changes when exposed. This is the hardest stratum of any that we find, as far as I have been able to observe. The top of it is 14 feet below the bottom of the limestone ledge. Next under this are two layers of 8½ feet each of medium hardness, with a soft, thin layer underlying them. Below this the sandstone appears to have been deposited in a more homogeneous mass than that above, and with few well-marked and continuous horizontal seams. This last division of the sandstone is about 49 feet thick. Next below we find a stratum so hard as to require drilling to penetrate it. This is cemented with alumina and iron, and is about 8 feet thick. This rests upon a stratum of blue clay 3 feet thick. Underlying this I find coarse-grained, friable, white sandstone, 27 feet thick; then 10 feet of sand and clay very hard; then 4 feet of soft, yellowish sandstone; then I struck hard, bluish sandstone, which appears to have been cemented with clay and iron. It was very hard drilling, so much so that after drilling about 10 feet I gave it up. This last drilling was 148 feet below the bottom of the limestone ledge and appears to be the last of the soft sandstone formation. As the cementing material appears to be similar to that found in the Potsdam sandstone, I think this hard stratum extends down to the old red sandstone.

I made a boring at the clay bed one and a half miles above our works at the head of the ledge. This boring extended down 34 feet lower than the bed of the river at that place, which would be about 80 feet below the bottom of the ledge if it was in place there. I did not find any sandstone in place, but found drift-sand and clay. The bottom of the hole was in a layer of sand so soft that it would fill up the boring so that I could not go deeper without tubing the hole.

I found the sandstone in place, back some distance from the river, on both sides. This last boring shows that the sandstone in the bed of the river has been washed out at some former time, and its place now filled with drift-sand and clay. This washing out appears to extend down to within about one and a half miles of the falls.

The dip of the ledge from the suspension-bridge up as far as my surveys extended, appears to be about 15 feet to the mile, the dip, or inclination, being down stream and slightly to the westward.

Estimating the top of this hard layer to be 86 feet below the bottom of the limestone ledge, the dip, or inclination, would bring it to the surface of the water, about five and three-fourths miles above the suspension-bridge. As this stratum is thin, and has a very soft, friable stratum of sandstone below it, 27 feet thick, it would not make a very reliable foundation.

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If this dip continues up stream at the same rate as above, we should find the next hard layer at a point about nine and one-fourth miles above the suspension-bridge, which would be the first place where we would be likely to find a reliable stratum in the bed of the river above, and to which place the rapids would no doubt extend if the falls should go o it.

I extended my examinations to this place, and the general appearance of the river and rapids tends to corroborate the correctness of the above theory.

Our surveys, and the experience that we have had in carrying on our work during the past season, show conclusively that we have a very difficult task to preserve the Falls of Saint Anthony, and that it will require a much larger expenditure than at first contemplated, to make them secure against wearing away or undermining by the water getting under the ledge. and washing out the sandstone and letting down the ledge. This last difficulty seems to be the most formidable one presented at this time, and the one requiring immediate attention.

It will be seen by the accompanying map that the action of the water has formed deep cavities in the bed of the river above the head of the ledge, and that they have worn down to, and, in some cases below, the soft seam that we find 14 feet below the bottom of the limestone ledge; and our experience this season has proved concluively that the water has found its way through this soft seam into our works whenever we have excavated down to it in clearing out the *débris* to put in our permanent works to close up the tunnel.

The clearing away the head of the gorge and tracing it out into the bed of the river shows that the first break into the tunnel was caused by the water finding its way into this soft seam in a cavity in the bed of the river, and following along the seam which was cut off by the excavation of the tunnel, the bottom of which was on the hard stratum immediately below this soft seam, the water percolating through moderately at first, and then increasing rapidly as soon as it had displaced sand enough to have a clear channel through from the bed of the river to the tunnel.

It was this same layer through which the water came into our excavation when the leaks occurred, spoken of in the first part of this report. After finding out that the leak came in under these upper strata, I had determined to clear out a trench at the head of the gorge down to this hard layer, with the water standing in the gorge to the depth of 7 or 8 feet, and put in a concrete wall as an experiment, to see if the water could be closed back in this way, while I pumped out and made the excavation for the foundation to the main wall, across the gorge, which I did, and found this mode of closing up this leaky seam worked successfully.

In the gorge, when the water flowed through into the tunnel in a large volume and unobstructed for several days in succession, there was very little wear in this hard stratum which formed the bed of the gorge and tunnel. This fact, together with the appearance of this hard stratum in the bluffs below the falls, where it is exposed to the action of the frost and atmosphere, shows that it is the hardest and most reliable stratum for a foundation that we have near the top of the sandstone formation.

It seems to me that the most feasible way to prevent further leaks into the tunnel and to guard against the water finding its way under the ledge and coming out at the brink of the falls, thereby rendering the destruction of the falls certain, would be to commence a wall at the southerly side of the main wall that I have built across the

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gorge, and carry it across the entire width of the river near the head of the limestone ledge, commencing the foundation on this hard stratum 14 feet below the bottom of the limestone ledge, bringing it up even with the top of the ledge, and joining it on to the same. I would break off the ragged edge of the ledge, and quarry it off down to where it was from 2 to 3 feet thick, and then excavate my trench and put in my wall.

It might be thought best, and it would probably be practicable, to sink this trench and extend the wall down deeper into the sandstone, so that the bottom of the wall would be lower down than the cavities in the bed of the river above.

In places where the sandstone above the wall had been undermined and washed out, and made porous by the action of the water, I would take it out from 50 to 100 feet above the wall, and fill this excavation with a good clay and gravel puddle, having it well paved and riprapped, to protect it from being again washed out by the action of strong currents in the river at times of high water. I would build a coffer-dam out into the river, about 400 feet above the head of the ledge, where it would cut off the cavities in the bed of the river that have worn down into and below this soft, leaky stratum, carrying it out near the middle of the river, and turning and running down stream and join on to the head of the mill companies' dams, thus closing the water out of the river bed half the width of the river and 400 feet up stream, giving a good opportunity to fill up the bed of the river with puddle, paving, and riprap a sufficient distance above the head of the ledge, to prevent the water from ever wearing down cavities in its bed, so as to get under the proposed wall at the head of the ledge.

This wall I would extend into the banks of the river sufficiently far to prevent the water from finding its way around the ends, and protect the ends with wing-walls in the manner which would seem the most likely to accomplish the desired object.

The above-described work I estimate will cost $200,000.

Our surveys have also pointed out to us the cause of the wearing out of some of the deep cavities in the bed of the river, and permitting the water to come in direct contact with the soft, leaky seam.

The broken lines on the accompanying map will show the location of the large pier which formerly stood at the head of the ledge, where the wing-dams united near the center of the river. Immediately above the pier there are two deep cavities worn in the sandstone, and there is no doubt but what this wearing out was caused by a heavy jam of logs forming on this pier and extending up stream, over the site of these cavities, the logs obstructing the current of water, turning it underneath the logs and impinging a strong current of water directly against the sandstone in the bed of the river, and thus excavating these deep cavities. No doubt but what the other cavities in the bed of the river were produced by the same cause.

The pier marked in the accompanying map in the up-stream side of my embankment, no doubt caused the excavation of the cavity from which the original breach into the tunnel found its way. The large cavity in the bed of the stream nearest the easterly shore of the river was formerly the site of a large boom-pier, which held a jam of logs until it formed a cavity which undermined the pier and let it tilt into the cavity, discharging the ballast and allowing the hulk of the pier to float away.

I think the mill companies should be required to remove all of these piers from the bed of the river above the head of the ledge as far up as the suspension-bridge, and the bed of the river should be riprapped

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around those piers above the suspension-bridge, so as to prevent any further forming of cavities around them.

In my report to General Warren, dated December 7, 1869, I gave a description of the limestone formation at the Falls of Saint Anthony, and the causes that were operating to destroy it, and description and estimates of works necessary for its preservation. Also report and estimates for lockage, to continue navigation past the falls, with description of the ownership of property adjacent to the falls, to which I would respectfully refer, as the foregoing is supplementary to it. It may be found in House Executive Document 118, Forty-first Congress, second session.

I am, colonel, very respectfully, your obedient servant,

FRANKLIN COOK,
Engineer in local charge of work for preservation of Falls of Saint Anthony.

Colonel JOHN N. MACOMB,
Colonel of Engineers, U. S. A., Engineer in charge of surveys and improvements on the Upper Mississippi River.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a Senate resolution of April 9, 1872, information relating to the canal and dike at Du Luth, Minnesota.

APRIL 15, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *April* 13, 1872.

The Secretary of War has the honor to comply with the requirements of the resolution of the United States Senate of the 9th instant, by transmitting herewith a statement of the Chief of Engineers in regard to the canal and dike at Du Luth, Minnesota, and their effect upon the harbor of Superior, Wisconsin, and copies of correspondence, &c., in relation thereto.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 12, 1872.

SIR: In answer to the resolution of the Senate, of the 9th instant, "That the Secretary of War be directed to communicate to the Senate such information as may be in the possession of the War Department respecting the canal and dike at Du Luth, Minnesota, and their effect upon the harbor of Superior, Wisconsin," I beg leave to transmit copies of the correspondence of this office in relation to the matter in question, with explanatory maps.

The action of this office, together with its conclusions and professional opinions in the premises, as well as those of its agents, will perhaps be best understood from the following statement:

A communication was received at this office September 13, 1870, from Hon. C. C. Washburn, calling attention to a canal which was being cut across Minnesota Point, near the harbor of Superior, Wisconsin, which, if completed, would, in his opinion, ruin the entrance to that harbor, and requesting that immediate measures be taken to restrain the parties from doing further damage. This communication was transmitted to the Secretary of War September 20, 1870, with a letter from this office inviting his attention to its contents, and stating that the improvement in question was carried on by private enterprise, and was intended by its projectors to comprise an outer breakwater and an inclosed basin between Rice's Point and Minnesota Point, with a cut through the lat-

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ter to connect this basin with the waters of Lake Superior, having its exit protected by the breakwater. The project contemplated the completion of the basin before the construction of the canal. But that it appeared from General Washburn's letter that the cut across Minnesota Point was being made before completing the bulkhead or dike to inclose the basin. That, if so, the prosecution of the work upon the cut should be immediately stopped, because a canal made across Minnesota Point allowing the waters of the river and bay of Saint Louis to flow freely into Lake Superior, would prove seriously detrimental to the navigable entrance now being improved by the United States; and it was therefore suggested that the United States district attorney for that locality be instructed to prevent the cutting of the canal until the basin was inclosed.

March 28, 1871.—Information having been received at this office that work upon the Du Luth Canal had been or was about to be resumed, a copy of the above letter of September 20, 1870, was transmitted to Major Houston, Corps of Engineers, in charge of the harbor improvements at Superior City, with directions to report promptly any attempt to resume work upon the canal. A copy of the same letter and of these instructions to Major Houston, were transmitted at the same time to Senator Howe, of Wisconsin, for his information.

April 24, 1871.—A copy of instructions from the Department of Justice to C. K. Davis, esq., United States attorney at Saint Paul, Minnesota, dated April 20, 1871, to "institute such proceedings by injunction or otherwise as will stop the cutting of the canal," was received at this office.

May 1.—Major Houston reported that dredging was resumed on the canal across Minnesota Point on the 24th April.

May 3.—This reply was submitted to the Secretary of War with the suggestion that it be referred to the Attorney General for such action as might be deemed necessary.

May 6, 1871.—Major Houston forwarded information, received from the foreman of the harbor-works at Superior City, to the effect that the canal, April 30, was between 30 and 40 feet wide, and 5 feet deep; that a small steamer, drawing 4 feet, had passed through on that day, and that enough of the practical effect of the canal can now be seen to verify the opinion that, unless a dike is constructed between Minnesota and Rice's Points, the flow of water through the artificial channel must of necessity seriously weaken the current passing out at the natural entrance. This communication was submitted to the Secretary of War, with the suggestion that the matter be referred to the Attorney General. This information was also communicated to the district attorney at Saint Paul, by Major Houston.

May 22, 1871.—At the request of C. K. Davis, esq., United States district attorney, received through Hon. M. H. Carpenter, a copy of the report of the board of engineers convened January 5, 1870, to consider and report upon the plans submitted by Colonel Wheeler, Corps of Engineers, for the improvement of the harbor of Du Luth, was transmitted to the district attorney through the War Department.

Proceedings were had before Judge Miller, Associate Justice of the United States Supreme Court. In disposing of the temporary injunction, Judge Miller thus expresses himself:

> If, before the final hearing, it shall be made to appear in the manner indicated, or in any other manner satisfactory to the court, that the canal can be protected by a breakwater, so as to prevent the too rapid diversion of the water from the bay, or can, in any other manner, be completed without injury to the Government works, and if the

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complainants put their work in that condition, the injunction may be modified or dissolved. Nor can I doubt if the defendants here should ask of the Department in charge of these improvements a careful inquiry into the plan which they believe essential to their interests, that some mode of prosecuting such improvement would be found which would meet the approval of that Department, and obviate the necessity of a final decision by the court,

June 6, 1871.—J. J. Egan, city attorney for Du Luth, wrote to this office that the canal had been finished at that time to a width of 50 feet and depth of about 8 feet; that crib-work had been made for 75 feet into the lake on the north side of the cut, with a large quantity of material on hand for its further extension; that the expense incurred to that time was upward of $50,000, but that no steps had been taken to complete the dike, although it was a part of the plan; that an injunction had been granted, at the instance of the United States, to prevent further construction of the canal until the dike was built; and that, under the present situation of the work, the city of Du Luth is in danger of losing the entire work already completed, as it cannot be protected.

Under these circumstances, he asks, in behalf of the city of Du Luth, that the injunction be dissolved and further proceedings stayed, upon the city executing a bond in the sum of $100,000, conditioned that the dike be completed, in a good and sufficient manner, before the 1st day of December, 1871, and be maintained in such condition; the city of Du Luth also agreeing to complete the canal across Minnesota Point in accordance with the plan specified in this letter, and at such time as the city may be able to do so; the specification of the plan being, the canal to be 150 feet wide, 16 feet deep, and protected on the sides by crib-work extending into Lake Superior into about 18 feet water, and the contemporaneous construction of a dike or dam across Superior Bay, between Rice's Point and Minnesota Point, with locks for entry and exit of such craft as navigate the bay.

June 7, 1871.—This communication was submitted from this office to the Secretary of War, with the recommendation that the injunction be dissolved on the proposed conditions, because, if carried out in good faith, everything desired in asking for the injunction would be accomplished.

June 7, 1871.—This communication of the city attorney of Du Luth was transmitted by the Secretary of War to the Department of Justice, with the request that the district attorney of Minnesota be instructed to consent to the withdrawal of the injunction upon the conditions and according to the plan therein contained, and (June 8, 1871) the Attorney General informed the Secretary of War that the district attorney had been instructed accordingly.

June 20, 1871.—The Secretary of War referred to this office a letter from Hon. M. H. Carpenter, of Wisconsin, objecting to the above arrangement upon the ground that such a bond would be wholly void by reason of want of authority to make it. To which answer was made by this office that, as to the validity of the bond, it was supposed, when the recommendation was made, that if the agreement was not carried out in good faith by the town that the United States court could compel a compliance with it.

June 21, 1871.—Governor Fairchild, of Wisconsin, telegraphed to the Secretary of War that the harbor of Superior was closed to the boats usually entering there because of the canal across Minnesota Point.

June 22, 1871.—Major Houston was directed by telegram to report at once the facts of the case, which he did as follows: "Lieutenant Miller telegraphs: 'Width of canal, 44 feet; depth, from 6 to 16 feet; velocity, variable, from four to six miles an hour; velocity at entry, about the

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same; depth at entry, 9 feet; water shoaler there than before canal was cut; boats that came in then cannot enter now; no apparent cause for shoaling, except canal.'"

This telegram was transmitted June 30, 1871, to the Secretary of War, with the remark that—1st. The depth of the entrance is the same that it was a year ago, as shown by Major Houston's map of June 17, 1870; that the velocity of the current through the entrance is from four to six miles an hour, the width at the entrance being 420 feet. 2d. That the canal is 44 feet wide, and 6 feet deep, (the last cross-section governs the discharge,) and the velocity of the current the same as through the natural entrance at Superior City.

Therfore, under such state of facts it is impossible that the discharge through the canal could have any appreciable effect in diminishing the depth of the natural entrance at Superior City. The simple statement that the velocity of the current through the natural entrance at Superior City is from four to six miles an hour is sufficient to prove incontestably that no decrease of depth in the entrance has been caused by a reduction in the flow of water through it.

It is also recommended in this communication to the Secretary of War that it be required of the city of Du Luth that it should neither widen nor deepen the canal until the dike is finished, and that the construction of the dike should commence before the close of July and be continued with all practicable dispatch until finished. The city, at the same time, to be allowed to secure the work already done from either filling in or widening. A copy of this communication was sent July 6, 1871, by the Department of Justice to the district attorney for Minnesota.

July 6, 1871.—A letter was received from J. J. Egan, esq., giving information concerning the condition of the canal across Minnesota Point and proposed works at the head of the bay, in which he mentions the sudden changes in the direction of the current through the canal: "Within fifteen minutes a current passing out into the lake will be transformed into a current running heavily into the bay from the lake," no heavy winds or other abnormal conditions existing. He also states that during all the time the canal has been opened the waters of Saint Louis River and Bay pass out of the entry in their usual quantity and velocity. The depth of water had increased at the entry to 9½ feet, and was constantly increasing.

The receipt of this communication was acknowledged July 8, 1871, with the remark that the causes of the changes of direction in the current through the canal-cut are to be looked for not only in the variations in the volume of the Saint Louis River, but in the oscillations of the surface of the lake due to variations in the direction and strength of the winds, and the variations of atmospheric pressure, &c.

July 8, 1871.—A report from Major Houston, received July 3, was transmitted to the Secretary of War. From this report and the accompanying drawings, it appeared that the diminution of depth reported to exist at the entrance was occasioned by the extension of the pier on the Minnesota side. The extension had crossed the entrance channel and reached a shoal lying outside, which vessels entering had to cross. The inconvenience would be temporary, and was anticipated in the original design for this improvement, in which there is an estimate for dredging at this point when found necessary to prevent obstruction to navigation. The plan of improvement contemplates extending both piers beyond this shoal.

A copy of the report of Major Houston, and copies of the drawings

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accompanying it, were transmitted to the Department of Justice for the information of the district attorney at Saint Paul.

July 13, 1871.—The following letter was addressed to the Secretary of War, and a duplicate sent to Senator Carpenter:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 13, 1871.

SIR: In an interview just had with the Hon. M. H. Carpenter, he read to me a letter which he addressed to you on the 11th instant, concerning the removal of the injunction on the Du Luth Canal. He has fully explained to me his reasons for regarding the bond of the town of Du Luth void.

My reason for recommending the bond was that I thought the arrangement under which it was given would secure the construction of the dike during the present working season more effectually than any other arrangement; and I still think it would do so, if the bond were not void or voidable.

Senator Carpenter suggests that that end could have been attained by maintaining the injunction until the dike was built, but permitting the town of Du Luth to secure the work already done by building the necessary crib-work, the injunction to be dissolved upon the completion of the dike.

Had I been aware that the bond of the town of Du Luth was substantially no security; or that the suggestion in reference to it would be regarded as a positive instruction to the United States district attorney, which he was not at liberty to modify, in his discretion, so as to secure the object sought; or that the removal of the injunction and the conditions of removal were not discretionary with the United States judge, I should have abstained from any other than a general recommendation that the court take such action and exact such security as it considered proper to attain the end sought; that is, the construction of the dike during the present year.

I do not know whether the injunction has been dissolved. If it has not been, and the suggestion as to its modification instead of its removal receives your approval, there may be time to communicate them to the court before its action.

I have no reason to question the good faith of the town of Du Luth, or of its agent, in accepting the proposition to build the dike this year, and to give sufficient security to insure its construction; nor have I, therefore, any reason to suppose that objection will be made by them to the substitution of a modified injunction instead of its withdrawal under the bond of the city. Should, however, the action of the court have been already taken, personal securities upon the bond may still be exacted. It has not yet been received at the War Department.

There is an additional security for the construction of the dike, namely, the withholding by Congress of appropriations for the breakwater at Du Luth until the dike is built.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

July 14, 1871.—J. J. Egan, attorney for the city of Du Luth, was requested to submit a plan and mode of construction of the proposed dike from Rice's to Minnesota Point, at the earliest day practicable, for the approval of the Secretary of War, and that the project should provide for inspection of the work by officers of the Engineer Department during and after construction, so as to insure adherence to it; and on the same day Major Houston was also instructed to submit a plan, with estimates of cost, for such a dike, as well as the best location for it, so as to prevent the waters of the bay and river passing into the lake through the Du Luth Canal.

August 11, 1871.—The Secretary of War referred to this office a letter from George W. Perry, of Superior, Wisconsin, to Hon. M. H. Carpenter, in reference to the effect of the Du Luth Canal upon the depth of water in the channel of the entrance to the Bay of Superior. This letter was referred (August 12) to Major Houston, with directions to inquire into and report upon the statements therein contained, especially that in three days the Superior channel had filled in 2 feet 4 inches, no storm having occurred during the time. He was also directed to

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ascertain by whom and in what manner the depths in the channel were measured. This was returned by Major Houston, August 28, 1871, with a report from Lieutenant A. M. Miller, Corps of Engineers, from which it appeared that the channel had a depth of 8½ to 9 feet, and that the information upon which Mr. Perry based his communication was very unreliable. In Major Houston's opinion, it was not possible that the effects of the canal could have been the cause of any such sudden change.

August 12, 1871.—Major Houston, in compliance with the instructions of 14th July, submitted a plan of a dike across the head of Superior. His attention was called to his omission of its location, and he was further instructed (August 17) to submit a plan for such a location for the dike as would be most suitable for the commerce of Du Luth, both exteriorly and interiorly, and at the same time an estimate of its cost.

August 30, 1871.—In a report received this day, Major Houston supplies the above omission. His estimated cost of the dike is $34,098. He states: "If the dike is not imperatively needed, it would be better not to put it in, and I feel very doubtful of its necessity after the extension of the pier at Superior entry into deep water." And further: "The observations on currents at the entry, canal, and mouth of Saint Louis River, show that at the present stage of water in the Saint Louis River the canal has no detrimental effect on the entry."

August 22, 1871.—The Secretary of War refers to this office a communication from the Department of Justice, inclosing certain exceptions made by Hon. M. H. Carpenter, in reference to the bond of the city of Du Luth, suggesting that specifications should be obtained from this office showing the kind, form, and dimensions of the dike across the bay of Superior, as agreed upon, to be inserted in such bond. To this it was replied, August 25, 1871, that the attorney for the city of Du Luth had been requested to furnish a plan of the dike the city proposed to build, but that it had not yet been received; that it would not be judicious to require the city to build the dike in the manner proposed in the plan submitted by Major Houston, since some other method of construction might be more useful for their purposes and equally effective for those of the United States. It was recommended, therefore, that the bond specify merely that the dike shall be built in a substantial manner and to the satisfaction of the Secretary of War, and be completed not later than 1st of December next, (1871.) This reply was sent by the War Department to the Attorney General August 26, 1871.

September 2, 1871.—The city attorney of Du Luth transmitted a plan for the dike across Superior Bay. In acknowledging its receipt he was informed, September 9, 1871, that the plan submitted should be modified to give permanency to the structure by strengthening the piling by an earth-filling; that it should be made a continuous structure from shore to shore, and not left with any opening whatever. If a passage-way through the dike is necessary, this must be made in the form of a lock; and respecting the site of the dike, the local authorities must make their own selection, subject to the decision of such tribunal as may have authority to decide in any conflict of interests that may arise. The object sought to be attained by the War Department in requiring its construction is the permanent maintenance of the same volume of discharge at all seasons of the year through the natural entrance that existed before the canal was cut through Minnesota Point.

October 27, 1871.—Major Houston was instructed to make, just before the closing of the working season, a thorough and full inspection and examination of the works of improvement at Superior City harbor, and

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also of the cut made through Minnesota Point and the dike which was being built in connection therewith. With the results of this examination he was directed to give his views upon the question of the improvement of Superior City Harbor and of the harbor of Du Luth.

November 14, 1871.—Application was made by the city attorney of Du Luth in behalf of the city council for an extension of the stipulated time of completion of the dike across Superior Bay to April 1, 1872, giving an account of the progress of the work and the causes which had retarded its progress, although every effort had been made to have the work completed within the specified time. This was transmitted to the Secretary of War with the following indorsement:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., November 24, 1871.

Respectfully submitted to the honorable Secretary of War.

The object to be attained by the construction of this dike is to prevent the waters from Saint Louis River from flowing through the canal made by the city of Du Luth across Minnesota Point, instead of through the natural outlet at Superior City, and as the scouring or deepening of the bar at the Superior City entry is greatest during the season of freshets, or high water in the streams flowing into the Bay of Superior, it is believed that if the dike is thoroughly completed by the commencement of the season of spring freshets, no damage will result to the works of the United States at the entrance to the harbor of Superior City, nor will the depth of the water on the bar be diminished in consequence of the non-completion of the dike on the day named in the bond, i. e., December 1, 1871.

For these reasons, together with the statement within, "that every effort has been made to have the work completed within the time specified," I would recommend that the period be extended to March 15, 1872, which is substantially in accordance with the request of the authorities of the city of Du Luth.

Should the recommendation meet the approval of the Secretary of War, it is suggested that a copy of the communication be furnished the district attorney for Minnesota through the Department of Justice.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

The extension of time was approved by the Secretary of War December 5, 1871, and a copy of the application and its indorsement transmitted to the district attorney at Saint Paul through the Department of Justice.

November 22, 1871.—Major Houston transmitted a record of simultaneous observations, showing the direction and velocity of the currents and the tide-gauge readings at the entry of Superior Bay, at the Du Luth Canal, and at the mouth of the Saint Louis River, on the 9th, 10th, 11th, and 12th of August, 1871, with the state of the barometer and the direction and velocity of the wind. He gives it as his opinion that, so far as these observations bear upon the question of the Du Luth Canal, its effect upon the entry, and the necessity of a dike to prevent the waters of the Saint Louis River from passing through the canal, thus diminishing the scouring effect necessary to maintain the proper depth of water at the entry, they seem to show that, except in times of high water in the Saint Louis River, sufficient to overcome the lake influence, that the canal would have no effect whatever on the entry, as the current both through it and the entry is dependent entirely upon the rise and fall of the lake. But in times of freshets he thinks that the canal will, judging from the relative cross-sections of the canal and entry, and their relative distances from the mouth of the Saint Louis River, take enough water from the entry to reduce the flow through it perhaps one-fifth. He also reported the work on the dike as very poorly executed; that it was badly out of alignment, not water-tight, in some parts badly broken, and in others entirely gone. The manner of building is not in accordance with the agreement entered into with the city of Duluth.

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November 29, 1871.—The Secretary of War referred to this office a memorial of W. R. Smith and others, of Superior City, in relation to the injury done to the harbor at that place by the cutting of the canal through Minnesota Point by the city of Du Luth, and asking to have the legal proceedings revived, to the end that further work on the canal may be perpetually restrained, and the canal closed.

December 7, 1871.—This was returned to the Secretary of War with a letter to the effect that there was nothing in this memorial to modify in any way the recommendations heretofore made from this office upon this subject. The statement of the memorial that the entrance to Superior Bay has shoaled is shown to be unfounded by the reports of Major Houston.

December 20, 1871.—A letter was addressed to J. J. Egan, esq., city attorney of Du Luth, in reference to the manner of building and the condition of the dike across Superior Bay as not in accordance with the agreement entered into, and informing him that instructions had been given to have the dike inspected monthly, and that unless these inspections show a more satisfactory condition of the dike, and give assurance that it will be completed in a substantial manner by the middle of March, 1872, such proceedings will be had as will secure the entrance against injury.

February 7, 1872.—The Secretary of War referred to this office for report a communication from Hon. J. M. Rusk, inclosing a letter from Governor C. C. Washburn, of Wisconsin, in regard to the dike at Du Luth, objecting to its location, and claiming that the canal should be closed unless a close dike is built from near the east side of the canal to Rice's Point, or that it be constructed with gates, if placed where now contemplated by the city of Du Luth. This communication was returned February 13 to the War Department, inviting attention to the letter to the city attorney of Du Luth of September 9, showing that this office has uniformly abstained from giving any decision in regard either to the location or plan of constructing the dike, the only point insisted upon being that it shall be so located and constructed as to exclude from the Du Luth Canal, at all seasons of the year, the volume of discharge of the Saint Louis River, and also the reservoir flow of Superior Bay and its connections, excepting such part of that bay above the southern extremity of Rice's Point, known as the harbor of Du Luth.

March 7, 1872.—The secretary of state of Minnesota transmitted to the War Department certified copies of a memorial of the legislature of Minnesota to the Secretary of War, urging that no hasty or *ex-parte* action be taken to thwart the construction of the Du Luth Canal, or the dike across Superior Bay.

March 15, 1872.—Telegram sent to Major Houston to make a personal inspection of the dike at Superior Bay, and report its condition, as it had been formally reported to the Secretary of War by the mayor of Du Luth that it was completed in every respect.

March 25, 1872.—Major Houston was directed to inform this office whether any freshet had occurred in the Saint Louis River since the Du Luth canal was opened; and, if not, whether any material rise in the river had occurred since that time, and what had been its greatest volume of discharge since the opening of the canal as compared with its discharge in freshets. To which he replied March 27, that so far as his own observation extended there had been no freshet since the opening of the canal, but that he is credibly informed that at the time the canal was first opened the water surface in the bay Superior was, at that point, 8 inches higher than the lake. That no observations had been

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made to ascertain the discharge of the Saint Louis River in time of freshets, but that such would be, as soon as the season permitted. He stated further that all observations on the current at the canal entry and mouth of the Saint Louis River from June last to the present time show a continual ebb and flow of the current. And also that the least depth of water in the channel over the present bar is essentially the same that it was in March, 1870.

March 25, 1872.—A report was received at this office from Major Houston of his personal inspection of the dike at Superior City, in obedience to the instructions of March 15. He states:

The dike extends from near the southern extremity of Rice's Point to Minnesota Point, and is 4,490 feet in length. It is constructed of crib-work weighted down by stone ballast and filled with sand. The width of the dike is 10 feet. With the exception of about 800 feet at the eastern end it is constructed of sawed timber, mostly 6 by 8 inches, and 4 by 8 inches, so that the side walls are 8 inches thick, and are connected throughout by ties of the same material, and secured by wrought-iron spikes.

For 800 feet, near Minnesota Point, the work is constructed of round logs secured by iron bolts. The side walls are lined on the inside with inch-boards closely jointed to hold the filling. The dike is not built in separate cribs, but is continuous throughout, the timbers of the side walls breaking joints, with the exception of a section of 100 feet at the end of the log crib-work. This portion is a single crib, and fits close to the rest of the work. In case it should ever be necessary to make an opening in the dike, this section can be removed without disturbing the rest of the work. The filling of sand was obtained from Rice's Point, and conveyed by railroad-cars, a track having been laid over the whole length of the dike for the purpose. The work has, therefore, been well settled by the continual passage over it of a locomotive and train.

Owing to the uneven character of the bottom, and the presence of soft material, the work has settled unevenly, so that at some points it is only six or eight inches above the water-level, and at others 2 or 3 feet. A force is engaged leveling up the low places.

The filling is generally up to the top of the work, except at two or three points where it seems to have settled. The work, as far as I could judge, is substantially built for the locality which is not exposed, and is at present an effectual barrier to any current. It cannot, however, be pronounced complete according to the requirements of the Government, as the water is now at its lowest stage.

The bay and river is entirely frozen over, as is also Lake Superior, for several miles east of Du Luth, and it is not probable that the ice will break up for some weeks. The weather is exceedingly cold. Last season both the bay and lake were open at this date.

As an exception to the above statement, the canal, through Minnesota Point, is not frozen over, and has not been during the winter for any length of time. The current has continued to ebb and flow in the same manner as observed last season. It is possible that, after the ice goes out, portions of the dike may settle, and the filling work down, but this can easily be remedied by building up to the proper height, and continuing the filling as long as any settlement takes place.

I would respectfully recommend that the dike be raised until it shall be in no place less than 3 feet above the present water-level; that the filling be continued as long as any settlement is observed, and that the ends of the dike be connected by earthen embankments with the high ground at each end, the top of the embankment to be 10 feet wide, and of the same height above water as the dike.

In conclusion, I would say that all possible requirements have been fulfilled thus far, and the work accomplished has been a marvel of industry and enterprise, affording the most complete evidence of the good faith of the city of Du Luth in this work.

The work cannot be pronounced as complete until after the ice has disappeared, and the effect of the spring-freshets observed.

March 29, 1872.—Major Houston submits a report upon the memorial to Congress from the State of Wisconsin, dated March 2, 1872, asking for proper enactments for filling up the canal at Du Luth, and for removing the dike to the Bay of Superior. This memorial was transmitted to the Secretary of War by the chairman of the Senate Committee on Commerce for such information as he might be able to furnish, together with recommendations and suggestions, and was by the Secretary of War referred to this office, March 23, for report thereon.

Major Houston gives an account of the harbor improvement at the

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head of Lake Superior, and concludes that the canal has had no detrimental influence upon the entry of Bay Superior; that it can have no injurious effect except in time of freshets; that this injurious effect will not last after the works of improvement at the entry are completed and a channel excavated either by the scour of the current or by dredging; that all possible diminution of scour will be prevented by the dike if properly built, and that, after the completion of the United States improvement at the Superior entry, probably this season and certainly the next, there will be, in his opinion, no further necessity for the dike for the purposes for which it was built.

Most of the views expressed by Major Houston in this report are concurred in, but some of them are not; as in the judgment of this office a dike to exclude the flow of the Saint Louis River through the Du Luth canal during floods will be as necessary after the completion of the harbor-works at Superior entrance as before their completion.

April 6, 1872.—A letter from W. B. Gaw, civil engineer, to the Secretary of War, of March 9, 1872, reporting, at the request of the authorities at Du Luth, the condition of the dike across Superior Bay, was returned to the Secretary of War, with a copy of Major Houston's report of March 25, and the following remarks: "It will be seen that Major Houston is of the opinion that the dike cannot be pronounced complete until after the ice has disappeared and the effects of the spring-freshets observed. He recommends that the dike be raised until it shall be in no place less than 3 feet above the present water-level; that the filling be continued as long as any settlement is observed, and that the ends of the dike be connected by earthen embankments with the high ground at each end; the top of the embankment to be 10 feet wide, and of the same height above water as the dike."

These views were concurred in, and it was suggested that a copy of this letter and of Colonel Houston's report be sent to the mayor of Du Luth for his information and guidance.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

CORRESPONDENCE IN RELATION TO THE CANAL AND DIKE BUILT BY THE CITY OF DU LUTH ACROSS MINNESOTA POINT AND SUPERIOR BAY.

September 13, 1870.—Hon. C. C. Washburn calls attention to the fact that a canal is being cut across Minnesota Point, near the harbor of Superior, which, if completed, will ruin the present entrance to the harbor now being improved by the Government. Requests that immediate measures be taken to restrain the parties from doing further damage.

(Sent to Secretary of War, with letter of this office of September 20, 1870, and not returned by the War Department.)

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., September 20, 1870.

SIR: I have the honor respectfully to invite your attention to the accompanying letter of the Hon. C. C. Washburn, with its inclosed

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sketch. The sketch will suffice to show the relative positions of the improvements named, due allowance being made for its errors.

The improvement at the entrance to Superior Bay is carried on by the Engineer Department, under the direction of the Secretary of War, with moneys appropriated by the Congress of the United States. That at Du Luth is carried on by private enterprise, probably with the sanction of the State of Minnesota.

This improvement, as explained by the projectors, proposes an outer breakwater and inclosed basin between Rice's Point and Minnesota Point, and a cut through the latter connecting the basin with the waters of Lake Superior, having its exit protected by the breakwater. The position of the canal, as shown on the sketch, should be nearer the town of Du Luth, and the breakwater prolonged beyond it, in order to give a fair representation of what is intended. Their project contemplated the completion of the basin before the construction of the canal. But it is evident, from General Washburn's letter, that they are making the cut before completing the bulk-head or dam to inclose the basin. If this be the case, the prosecution of the work upon the cut should be immediately stopped, because a canal made across Minnesota Point, allowing the waters of the river and bay of Saint Louis to flow freely into Lake Superior, would prove seriously detrimental to the navigable entrance now being improved by the United States. I would, therefore, suggest that the United States district attorney for that locality be instructed by the proper authority to prevent the cutting of the canal until the basin is inclosed.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brevet Major General, U. S. A., and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

Indorsement on copy of letter to Secretary of War of September 20, 1870, relative to canal or cut through Minnesota Point:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 28, 1871.

Respectfully transmitted to Major Houston for his information, and with the request that he will report promptly any attempt to resume work upon the canal or cut referred to.

By command of Brigadier General Humphreys:

JNO. G. PARKE,
Major of Engineers.

Indorsement on same as above:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 28, 1871.

The within copy of a letter from the Chief of Engineers to the Secretary of War, dated September 20, 1870, in reference to the proposed canal or cut through Minnesota Point, is furnished Senator Howe for his information.

The officer of engineers in charge of harbor-works in that region has been instructed to report promptly any attempt to resume work upon the canal or cut.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

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Indorsement on communication of Major Houston relative to resumption of work on canal across Minnesota Point near Du Luth:

OFFICE CHIEF OF ENGINEERS, *May* 3, 1871.

Respectfully submitted to the honorable Secretary of War, in connection with letter from this office of September 20, 1870, and with the suggestion that it be referred to the Attorney General of the United States for such action as may be deemed necessary.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, May 6, 1871.

GENERAL: I have the honor to forward the inclosed extract from letter received this day, from the foreman at Superior City, in relation to the Du Luth Canal. A copy is sent to C. R. Davis, United States district attorney at Saint Paul.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

SUPERIOR, WISCONSIN, *May* 1, 1871.

SIR: * * * * * * *

The stream through the canal is swift and strong; it is between 30 and 40 feet wide; the depth is not exactly known, but is, I think, about 5 feet deep. The small steamer F. C. Fero passed entirely through yesterday. She draws 4 feet of water. The channel is known to have deepened somewhat since then. Having opened this passage for the flow of water into the lake, the dredge has now hauled back, and is at work deepening and widening the inner end of the canal. The rapidity of the stream is estimated at about six miles per hour, with a probable increase when the excavation is completed, and certain obstacles which now impede the flow are removed, unless in the mean time the level of the bay should subside, as of course it will whenever the current of the Saint Louis slackens. Enough of the practical workings of the canal can now be seen to verify the opinion of the engineer board fully, for unless a dike is constructed between Minnesota and Rice's Points, the flow of water through this artificial channel must of necessity seriously weaken the current passing out at the natural entrance.

Legal measures now in progress will undoubtedly bring this work to a close very soon. I have seen the Attorney General's letter to the district attorney at Saint Paul; but the cut is made, and while the case is pending in the courts the influence of the work already performed will be steadily operating to the injury of the regular entrance.

Very respectfully, your obedient servant,

J. C. ALMY.

Colonel D. C. HOUSTON,
Corps of Engineers, United States Army, Chicago, Illinois.

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Indorsement on communication of Major Houston relative to canal across Minnesota Point, at Du Luth:

OFFICE OF THE CHIFF OF ENGINEERS,
May 10, 1871.

Respectfully submitted to the Secretary of War in connection with letter from this office of September 20, 1870, and indorsement of May 3, 1871, with suggestion that the matter be referred to the Attorney General. This information has been communicated to the district attorney at Saint Paul by Major Houston.

By command and in the absence of the Chief of Engineers.

J. B. WHEELER,
Major of Engineers.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., May 22, 1871.

SIR: The letter of C. K. Davis, esq, of the 26th April, addressed to and forwarded by the Hon. M. H. Carpenter, requesting information in relation to the proposed canal across Minnesota Point, is herewith respectfully returned, with the remark that the subject was brought to the attention of this office by a communication from the Hon. C. C. Washburn, which was transmitted to the Secretary of War with letter of September 20, 1870, copy inclosed.*

I transmit herewith, for the information of the district attorney, a copy of the report of the board of engineers on the harbor of Du Luth, convened to consider and report upon the plans submitted for its improvement by Colonel Wheeler of the Corps of Engineers.

There is no other information on the subject in this office.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wisconsin, November 30, 1869.

GENERAL: In obedience to your orders of May 7, 1869, I instructed Captain James W. Cuyler, United States Engineers, to make a survey of the harbor of Du Luth, Minnesota, and submit a plan for its improvement, with estimates of cost.

For a better understanding of the case, he was required to connect his survey with that of the entrance to Superior Bay. A tracing of the map of this survey, marked "W. 3," accompanies this, and a copy of his report is herewith attached.

There are three projects discussed by him for improving this harbor, which are as follows:

1st. By constructing a breakwater in the lake, 2,622 feet long, beginning at a point on the shore about 1,200 feet east from Minnesota Point, and extending out into the lake parallel to the general direction of Minnesota Point.

* See volume 12, page 54, Secretary of War.

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2d. By cutting a canal through Minnesota Point, nearly opposite Rice's Point, building parallel piers into the lake, and dredging for an interior harbor.

3d. By using the present entrance to the bay of Superior, and dredge out a basin for an interior harbor, as proposed in the foregoing plan:

The estimated cost of plan No. 1	$387,253
The estimated cost of plan No. 2	270,014
The estimated cost of plan No. 3	132,241

For a full description of these plans, and detailed estimates of cost, I would refer to his attached report. I would recommend the first plan, if commerce or the interests of commerce require it. The second plan would result in serious injury to the entrance at present being improved. The third plan, if carried out, would amply accommodate all the commerce of Du Luth for some time to come. This plan is dependent upon the further improvement of the entrance to Superior Bay, and would not be necessary until they were completed. These improvements are in progress, and their influence upon the harbor have as yet hardly been felt. As soon as the piers are extended a little farther out into the lake, manifest signs of improvement will be made, and many objections now offered to this plan will pass away.

I am, general, very respectfully, your obedient servant,

J. B. WHEELER,
Major Engineers and Brevet Colonel, U. S. A.

Major General A. A. HUMPHREYS,
Chief of Engineers, Commanding Corps of Engineers, U. S. A.

Extract from the proceedings of the board of engineers convened in pursuance of Special Orders No. 1, of January 5, 1870.

* * * * * * *

HARBOR OF DU LUTH, MINNESOTA.

Du Luth is at the west end of Lake Superior, upon an open coast, with no other natural advantage for a harbor than deep water affords. The west end of the lake, for a mile from the coast, has been known to be closed by ice as late as the first week of June.

The only natural harbor in this part of the lake, west of the Apostle Islands, is that afforded by the Saint Louis River, which debouches at the lower end of Minnesota Point, about seven miles from the village of Du Luth; and for this the General Government has already adopted a plan of improvement and progressed therewith to the extent of making the mouth of the river valuable as a harbor. The completion of this improvement, at a probable additional cost of $155,000, will, undoubtedly, furnish all the accommodations for vessels required by the present or prospective wants of the commerce likely to center at the head of Lake Superior.

An exterior artificial harbor at Du Luth could be constructed only at a much greater cost, and when made would be more limited in its advantages and more expensive to keep in repair.

In view of these facts, and after an examination of the three plans for the improvement of this harbor, presented by Colonel Wheeler, the board is

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of the opinion that the present wants of the commerce of Du Luth are already sufficiently provided for, and that its possible future commerce may be best and most economically provided for by the completion of the improvements of the entry to Superior Bay, or mouth of the Saint Louis River, and therefore recommends the adoption of the third plan, presented by Colonel Wheeler in his report to the Chief of Engineers, dated November 30, 1869, which seems to the board to be the most desirable of the three.

All of which is respectfully submitted.

J. N. MACOMB,
Colonel Engineers, Brevet Colonel, U. S. A.
W. F. RAYNOLDS,
Lieutenant Colonel of Engineers, Brevet Brigadier General, U. S. A.
J. B. WHEELER,
Major of Engineers, Brevet Colonel, U. S. A.
G. WEITZEL,
Major of Engineers, Brevet Major General, U. S. A.
WALTER McFARLAND,
Major of Engineers, Brevet Major, U. S. A.

WASHINGTON, *June* 6, 1871.

SIR: On behalf of the city of Du Luth permit me to draw your attention to the canal being constructed across Minnesota Point at the head of Lake Superior and make a statement of facts concerning the same.

1st. Canal being constructed by the city of Du Luth, under authority of State of Minnesota, to be 150 feet wide, 16 feet deep, and protected on sides by cut-work extending into Lake Superior, into about 18 feet of water.

2d. Plan contemplates contemporaneous construction of a dike or dam across Superior Bay, between pier and Minnesota Point, with strip-locks for exit and entry of such craft as navigate the bay.

3d. The canal at present is cut through the point so as to permit commingling of lake and bay waters, but is only about 50 feet wide and about 8 feet deep. Cribbing is about 75 feet into Lake Superior on the north side, with large quantity of material on hand ready to the further extension of cribbing. Object of this cribbing is to prevent the literal action of the lake filling up the canal during prevalence of storms. Expense already incurred in said work $50,000 and upward.

4th. No steps have as yet been taken to complete said dike, although it is and was a part of the plan. Estimated cost of the dike about $40,000.

5th. The United States recently instituted a suit to prevent further construction of canal until the dike was built and asked for a temporary injunction. Injunction granted.

6th. Under present situation of affairs the city of Du Luth is in danger of losing the entire work already completed, owing to well-known Lake Superior causes, as, under the temporary injunction, she cannot even protect the work already complete.

From the foregoing the undersigned, on behalf of the city of Du Luth, respectfully asks that said city of Du Luth be allowed to go on and put the work already done in a safe and permanent condition, and finally complete the same in accordance with plan and specifications, and that upon said city executing a bond, in the sum of $100,000, to the United

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States, conditioned that said dike or dam be completed on or before the 1st of December, 1871, that then the United States district attorney for the State of Minnesota be instructed to consent that said injunction be dissolved, and further proceedings in said action of United States *vs.* City of Du Luth stayed, it being understood that said city of Du Luth is anxious and willing to build said dike as soon as her financial condition will permit, and that she makes this application in good faith, so as to secure for herself harbor facilities at an early day and accommodate her growing commerce.

Yours, respectfully,

J. J. EGAN,
City Attorney for Du Luth.

General A. A. HUMPHREYS,
Commander Corps of Engineers,
Washington, D. C.

Indorsement on communication of J. J. Egan:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 7, 1871.

Respectfully submitted to the honorable Secretary of War, with the recommendation that the injunction be dissolved and further proceedings in this matter be stayed, upon the city of Du Luth executing a bond in the sum of $100,000 to the Secretary of War, for the United States, conditioned that the dike across the bay of Superior be completed in a good and sufficient manner on or before the 1st day of December, 1871, and be maintained in such condition, the said city of Du Luth also agreeing to complete the canal across Minnesota Point, in accordance with the plan specified in this letter, and at such time as the city may be able to do so. This arrangement being carried out in good faith will accomplish everything desired in asking for the injunction.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

NEW YORK, *June* 17, 1871.

DEAR SIR: Proceedings were, as you know, recently commenced against the city of Du Luth, Minnesota, to restrain the cutting of a canal across Minnesota Point, and an injunction has been obtained. I understand it is now proposed by Du Luth to give a bond to build a breakwater, on condition you will have the injunction dissolved. In my opinion, such a bond would be wholly void, there being no law authorizing the Government to take it, and the result of such a —— would probably be to enable Du Luth to destroy the harbor at Superior, Wisconsin. No bond that they will give, even if it were valid, could insure the maintenance of a breakwater. The injury, once committed, cannot be repaired. I therefore earnestly hope that you will not allow this course to be taken.

Very truly,

MATT. H. CARPENTER.
United States Senator, Wisconsin.

Hon. W. W. BELKNAP,
Secretary of War.

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Indorsement on letter of Hon. Matt. H. Carpenter, relative to cutting canal across Minnesota Point by city of Du Luth:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 20, 1871.

Respectfully returned to the honorable Secretary of War. Attention is invited to my indorsement (copy herewith) of June 7, on the letter of the city attorney for Du Luth. The views of that indorsement seem to me sound. As to the validity of the bond of Du Luth and the adherence to the terms of the adjustment, I have supposed, that if the agreement were not carried out in good faith by the town, that the United States court would compel a compliance with it. Is it possible that the authority of the United States cannot be enforced by the civil authorities and a community be compelled to conform its action thereto?

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

[Telegram.]

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 22, 1871.

Colonel D. C. HOUSTON,
United States Corps of Engineers, Chicago, Illinois:

Governor Fairchild telegraphs the Secretary of War that the harbor of Superior is closed to the boats usually entering there, because of the canal across Minnesota Point. Report at once by telegraph what are the facts of the case.

A. A. HUMPHREYS,
Chief of Engineers.

[Telegram.]

CHICAGO, ILLINOIS, *June* 22, 1871.

General A. A. HUMPHREYS:

Reports show about 18 inches less water on the bar at Superior than last year. A survey is in progress.

D. C. HOUSTON,
Major Engineers.

[Telegram.]

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 22, 1871.

Colonel D. C. HOUSTON,
United States Corps of Engineers, Chicago, Illinois:

All the facts bearing upon the question should be ascertained. The width and depth of the canal; the velocity of the current through it; the velocity of the current through the natural entrance at Superior; what the depth was at Superior just before the canal was cut through; what it is now; whether there have been easterly storms or strong winds, and at what times and with what results.

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Telegraph to your assistants at Superior and Du Luth for the information.

It is stated that, on May 31, there was more than 9 feet water on the bar at Superior; that, on June 3, the Minnesota Canal was deepened to 16 feet; that, on the 9th June, there was less than 8 feet on the bar, and, on the 11th of June, less than 7½ feet on the bar; and that careful soundings show less than 7 feet on the bar; that neither the Keweenaw nor the City of Madison could get over the bar. What are the facts of the case?

A. A. HUMPHREYS,
Chief of Engineers.

[Telegram.]

CHICAGO, *June* 22, 1871.

General HUMPHREYS, *Chief of Engineers:*

I have telegraphed to Lieutenant Miller for full report by telegraph.

D. C. HOUSTON,
Colonel of Engineers.

STATE OF WISCONSIN, EXECUTIVE DEPARTMENT,
Madison, June 14, 1871.

SIR: I am informed by the attorney general of this State that orders have been given to withdraw the injunction obtained to restrain the cutting of the canal by the city of Du Luth through Minnesota Point. I am also informed by letters from Superior that the channel of the Saint Louis River has been so much changed as to very seriously interfere with the navigation of the entry to the harbor. I send you copy of one letter I have received. Others of the same import have been received. Is there no protection for the interests of the people dependent upon the old entry into the Bay of Superior?

The erection of the proposed dike may prevent the permanent change of the waters of the Saint Louis River. At the same time it will cut off the people from the free and unobstructed navigation of the public waters of Superior Bay.

The question arises as the right of such proceeding. In the mean time, until the dike is finished, the harbor of Superior City is nearly ruined, to remain so until it pleases the Du Luth authorities to complete it, and possibly to await the prosecution of the bond I am informed has been given. The Departments of the General Government are, of course, anxious to protect the rights of all the people. I therefore refer this matter to you, confident that you will not lose time in investigating the same and that you will take such prompt action as the case demands.

Respectfully, your obedient servant,

LUCIUS FAIRCHILD.

WM. W. BELKNAP,
Secretary of War, Washington, D. C.

Indorsement on copy of communication from governor of Wisconsin, relative to injury of harbor of Superior City by cutting a canal through Minnesota Point by city of Du Luth:

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 23, 1871.

Respectfully forwarded for the information of Colonel Houston, in connection with the telegram of yesterday's date.

By command of Brigadier General Humphreys.

JNO. G. PARKE,
Major of Engineers.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 30, 1871.

SIR: In reference to the letter of the Hon. M. H. Carpenter, of the 24th instant, I send herewith a copy of telegram of 26th instant, from Major D. C. Houston, the engineer officer in charge of harbor works on Lake Superior.

It will be perceived—

1st. That the depth at the entrance to Superior City, ascertained by survey just made, is 9 feet, and is the same that it was a year ago, as shown on Major Houston's map of June 27, 1870; that the velocity of the current through the entrance is from four to six miles an hour, the width at the entrance being 420 feet.

2d. That the canal is 44 feet wide and 6 feet deep, (the least cross-section governs the discharge,) and the velocity of the current the same as through the natural entrance at Superior City.

Under such a state of facts, it is impossible that the discharge through the canal could have any appreciable effect in diminishing the depth of the natural entrance at Superior City. The simple statement that the velocity of the current through the natural entrance at Superior City is from four to six miles an hour is sufficient to prove incontestably that no decrease of depth in the entrance has been caused by a reduction in the flow of water through it.

It might be well to require of the city of Duluth, in addition, that it should neither widen nor deepen the canal until the dike is finished, and that the construction of the dike should commence before the close of July, and be continued, with all practicable dispatch, until it is finished.

The city should be allowed, however, to secure the work it has already done from filling in, and, on the other hand, be required to prevent, by suitable works, the canal from widening and deepening, should such changes begin to take place.

The decision upon all these matters relating this to canal, including proper security for enforcing the immediate construction of the dike, rests with Mr. Justice Miller, who granted the injunction; and I would therefore suggest that this communication be sent to the proper United States attorney.

Those who represent the interests of the State of Wisconsin will, it is presumed, have the opportunity of being heard by the judge.

The letter of the Hon. Mr. Carpenter is returned, and there is herewith a copy of Major Houston's map of survey of the entrance to Superior City, June, 1870.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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[Telegram.]

CHICAGO, ILLINOIS, *June* 26, 1871.

To General A. A. HUMPHREYS, *Chief of Engineers:*

Lieutenant Miller telegraphs as follows: "Width of canal 44 feet; depth from 6 to 16 feet; velocity variable, from four to six miles an hour; velocity at entry about the same; depth at entry 9 feet, water there shoaler than before canal was cut. Boats that came in there cannot enter now; no apparent cause for shoaling except canal."

D. C. HOUSTON,
Major of Engineers.

DU LUTH, MINNESOTA, *June* 28, 1871.

SIR: Permit me to take the liberty of informing you from time to time of the condition of the canal across Minnesota Point, and to make such statement of facts concerning this important enterprise as will at least give you some information on the subject. The work is being pushed forward with all possible energy and dispatch. Cribs are being prepared and put in place on the north side of the canal, and will be extended into the lake as fast as possible.

The current from the lake has been passing into the bay at least two-thirds of the time since the opening. This I give from my own knowledge, and from testimony of engineers, and many reliable persons who dwell in the vicinity, and there can be no doubt of the fact. A peculiarity connected with the matter is, that frequently the current through the canal will change completely in a very short interval. Within fifteen minutes a current passing out into the lake will be transformed into a current running heavily into the bay from the lake, no heavy winds or other abnormal condition of affairs existing. During all the time the canal has been opened the waters of the Saint Louis River and Bay pass out the entry in their usual quantity and velocity. Two weeks ago the depth of water in the entry was only 7½ feet; now it is 9½, and constantly increasing. Surveys are being made for dike or dam across Superior Bay, and in a few days I shall take pleasure in forwarding you an official tracing of entire plan of our harbor improvement system.

Many rumors and statements may reach you concerning the progress of affairs in this matter from sources hostile to our growth and prospective importance, but be assured that we are carrying everything out in good faith, and shall always hold ourselves in readiness to cheerfully co-operate with the General Government in its plans for harbor improvement at head of Lake Superior. We desire to be in full accord with your Bureau, and will entertain and conform to such suggestions as you may be pleased to offer.

No abrasure of earth on the sides of the canal has occurred as yet, and from present appearances none are likely to occur.

Respectfully, yours,

J. J. EGAN,
City Attorney of Du Luth.

Brigadier General A. A. HUMPHREYS,
Engineer Bureau, Washington, D. C.

P. S.—Cannot the water from the lake passing into the bay through canal more than two-thirds of the time be accounted for on the the-

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ory that the littoral action of Lake Superior first meeting the opening of canal, rushes in, instead of awaiting the farther distant entry at the mouth of the river, and this being a fact, of course the additional volume of water passing into the bay has to pass out the entry, and thereby contributes to the volume and velocity of water passing there through and increases the scouring capacity, as per theory of Government?

E.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 8, 1871.

SIR: I beg to return my thanks for the information contained in your letter of the 28th ultimo, in relation to the condition of the canal across Minnesota Point, and the proposed works at the head of the Bay of Superior, and would be glad to receive such further information as you may from time to time think proper to communicate.

The causes of the direction and sudden changes you mention as existing in the current through the canal cut are to be looked for not only in the variations in the volume of the Saint Louis River, but in the oscillations of the surface of the lake, due to variation in the direction and strength of the winds, and the variations of atmospheric pressure, &c.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

J. J. EGAN, Esq.,
Attorney at Law, Du Luth, Minnesota.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 8, 1871.

SIR: It will be perceived from the accompanying report of Major Houston, and tracings which I have the honor to transmit, showing the condition of the entrance of the Bay of Superior in 1866, before the present improvement was begun, and also the present extent of piers built, that the diminution of depth reported to exist at the entrance is occasioned by the extension of the pier on the Minnesota side. This extension has now crossed the entrance channel and reached a shoal lying outside, which vessels entering have now to cross. The current has not yet had time to open a new channel across the shoal to the full depth of the old channel.

The inconvenience is temporary, and was anticipated in the original design for this improvement, in which there is an estimate for dredging at this point, when found necessary, to prevent any temporary interruption or obstruction to navigation. The plan of improvement contemplates extending both piers beyond this shoal.

I beg to suggest that the accompanying report of Major Houston, and tracings, be transmitted, with a copy of this communication, to the Department of Justice, for the information of the district attorney at Saint Paul.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, June 29, 1871.

GENERAL: I have the honor to forward the accompanying reports from Lieutenant A. M. Miller and Mr. George C. Almy, in regard to the canal across Minnesota Point. I also send copy of the Lake Survey map of the Bay of Superior, showing the different projects proposed for improving the harbor of Du Luth, and the location of the canal now being constructed. I have indicated in pencil the position of the proposed dike, as I understand it.

I inclose also maps of the outlet of Superior Bay, showing the extension of the piers up to date. From this it appears that the Minnesota pier has been extended directly across the old channel by which vessels entered the harbor. It was hoped that the scouring effect of the current would be sufficient to keep the channel open to the same depth it had prior to the pier extension. Work is now going on under two contracts, and both piers are being extended. According to the original project for this harbor, it was estimated that 42,000 cubic yards of dredging would be necessary, as the piers cross a bar where the least depth at the time of Lieutenant Miller's survey of last July is but eight feet—so that, unless dredging is resorted to, vessels drawing over 8 feet of water will not be able to enter the harbor of Superior.

From the accompanying reports it is difficult to say that the shoaling reported is the result directly of the opening of the canal, as the shoaling may have occurred from other causes; and had the Minnesota pier been extended as far as it is now, the depth of water would have been reduced to nearly 9 feet. At the same time, nothing should be permitted which would have a tendency to diminish the strength of the current, for the bar over which the new channel is to pass has already been cut down, by the force of the current directed by the piers, 4 or 5 feet, as shown by reference to the small tracing inclosed, showing the state of the channel before any piers were built. What is shown as the channel on this tracing is now crossed by the Minnesota pier, and the present channel passes out close to the head of the Minnesota pier, from where it takes a northerly course.

If it is possible now to suspend work upon the canal until the dike is built, it seems to me that it should be done. If work is stopped now, I think the canal will close up or that it can easily be closed by taking advantage of the state of the current. If the city of Du Luth is permitted to go on and widen the canal to its full width, I fear that the outlet at Superior will be seriously injured.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

SUPERIOR CITY, WISCONSIN, *June* 26, 1871.

MAJOR: I have the honor to acknowledge the receipt of your telegram of the 22d instant. It did not reach me until 9 p. m. on the 23d.

The soundings which I took on Saturday, 24th instant, at the entry were not quite as accurate as if the water had been calmer, but they will not vary more than two or three inches, and a vessel drawing 9 feet of water can barely get in at the entry channel. The measurement of

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the canal—44 feet—was taken at the narrowest part. There has been placed on the north side of the canal about 150 feet of cribbing. On this side the water is 16 feet deep. It shoals up toward the lake to 6 feet, where there is a kind of bar left by the dredge working forward. The depth of water at the entry channel, before the canal was cut through Minnesota Point, was more than it is now; how much, I am unable to state, as I had taken no soundings previous to the 24th of May, at which time the canal was opened; but that the water has shoaled here is evident from the fact that vessels that came in at the time of the opening of the canal cannot now enter; they have come up to the entry, attempted it, and been obliged to turn back. The current in the canal is very variable, sometimes running in and sometimes in the opposite direction. It changes two or three times during the day. The greatest velocity which I have seen there has been about six miles an hour.

I attribute the shoaling at the entry to the canal, as I can account for it in no other way. There have been no storms to raise the bar or freshets to bring down material for a deposit.

Since writing the above I have received from Mr. Almy a report of observations taken under my directions upon the current of the canal, which I inclose herewith.

Mr. Almy received your telegram of the 24th instant at 2 p. m. to-day, the 26th.

Very respectfully, your obedient servant,

A. M. MILLER,
First Lieutenant, Corps of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, U. S. A., Chicago, Illinois.

DU LUTH, WISCONSIN, *June* 26, 1871.

SIR: I have the honor to forward herewith a report of the current observations at the canal across Minnesota Point during the present month.

There is apparently not the slightest regularity in the movements of the current; it changes frequently during the day, running but a short time either way. Occasionally, for a time, no current can be seen, but this state of the water lasts only for a few minutes.

I have sometimes visited the canal without being able to detect any positive flow of water in or out, but finding the whole surface covered with small eddies.

Within a few days, I have seen the stream flowing into the lake in the face of a strong northeast wind and a heavy surf, which at the time was rolling into the lake entrance of the canal. At present it is difficult to determine satisfactorily the causes that influence the movement of water through this passage, and so long as the widening of the canal and the construction of the proposed dike is in progress, any experiments will be unreliable.

Very respectfully, your obedient servant,

G. C. ALMY.

Lieutenant A. M. MILLER,
Corps of Engineers, U. S. A., Superior City, Wisconsin.

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Date.	MORNING.			NOON.			EVENING.			Remarks.
	Direction.	Velocity.	Wind.	Direction.	Velocity.	Wind.	Direction.	Velocity.	Wind.	
June 5, 1871	*Out	Moderate	N. E	In	Moderate	N. E	Out	Moderate	N. E	
June 6, 1871	Out	Rapid	West	Out	Rapid	West	Out	Rapid	N. W	
June 7, 1871	Out	Rapid	N. W	In	Moderate	North	Out	Moderate	North	Rise of lake surface during the day, 0.18.
June 8, 1871	Out	Moderate	N. E	Out	Moderate	North	Out	Moderate	North	Rise of lake surface during the day, 0.19.
June 9, 1871	In	Rapid	N. E	Out	Moderate	East	Out	Rapid	S. W	Fall of lake surface during the day, 0.27.
June 11, 1871		Eddies	West	In	Rapid	West		Eddies	West	
June 12, 1871	Out	Moderate	South	In	Moderate	South	In	Rapid	West	Rise of lake surface during the day, 0.20.
June 13, 1871	Out	Moderate	S. W	In	Rapid	West	Out	Moderate	West	Rise of lake surface during the day, 0.20.
June 14, 1871	In	Rapid	S. W		Eddies	S. W	Out	Rapid	West	Fall of lake surface during the day, 0.39.
June 15, 1871	Out	Rapid	East				Out	Moderate	N. E	Fall of lake surface during the day, 0.05.
June 16, 1871	Out	Moderate	N. E	In	Moderate	N. E				Rise of lake surface during the day, 0.45.
June 17, 1871		No current	South	In	Rapid	N. E	Out	Moderate	N. E	Rise of lake surface during the day, 0.08.
June 19, 1871	Out	Moderate	North	In	Rapid	North	Out	Moderate	South	Fall of lake surface during the day, 0.20.
June 20, 1871	Out	Moderate	North	In	Rapid	East	Out	Moderate	North	Rise of lake surface during the day, 0.77.
June 21, 1871	In	Moderate	N. E	In	Moderate	East	Out	Moderate	South	Rise of lake surface during the day, 0.40.
June 22, 1871	Out	Moderate	West		No current	N. E	In	Moderate	North	Rise of lake surface during the day, 0.26.
June 23, 1871	In	Rapid	N. E		No current	N. E	Out	Moderate	N. E	Rise of lake surface during the day, 0.05.
June 24, 1871	Out	Moderate	N. E	Out	Moderate	East	In	Rapid	East	Rise of lake surface during the day, 0.17.

*Where the direction of the current is "out," it is to be understood as flowing from the Bay of Superior into the lake. The current is designated as "moderate" when its velocity does not exceed three miles per hour. The swiftest current I have ever seen in either direction is about six miles per hour.

Respectfully submitted.

G. C. ALMY, *United States Engineer Foreman.*

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 13, 1871.

SIR: In an interview just had with the Hon. M. H. Carpenter, he read to me a letter which he addressed to you on the 11th instant, concerning the removal of the injunction on the Du Luth Canal. He has fully explained to me his reason for regarding the bond of the town of Du Luth void.

My reason for recommending the bond was that I thought the arrangement under which it was given would secure the construction of the dike during the present working season more effectually than any other arrangement, and I still think it would do so if the bond were not void or voidable.

Senator Carpenter suggests that that end could have been attained by maintaining the injunction until the dike was built, but permitting the town of Du Luth to secure the work already done by building the necessary crib-work, the injunction to be dissolved upon the completion of the dike.

Had I been aware that the bond of the town of Du Luth was substantially no security, or that the suggestion in reference to it would be regarded as a positive instruction to the United States district attorney, which he was not at liberty to modify in his discretion so as to secure the object sought, or that the removal of the injunction and the conditions of removal were not discretionary with the United States judge, I should have abstained from any other than a general recommendation that the court take such action and exact such security as it considered proper to attain the end sought; that is, the construction of the dike during the present year.

I do not know whether the injunction has been dissolved. If it has not been, and the suggestion as to its modification instead of its removal receive your approval, there may be time to communicate them to the court before its action.

I have no reason to question the good faith of the town of Du Luth, or of its agent, in accepting the proposition to build the dike this year, and to give sufficient security to insure its construction; nor have I, therefore, any reason to suppose that objection will be made by them to the substitution of a modified injunction instead of its withdrawal under the bond of the city. Should, however, the action of the court have been already taken, personal securities upon the bond may still be exacted. It has not yet been received at the War Department.

There is an additional security for the construction of the dike, namely, the withholding by Congress of appropriations for the breakwater at Du Luth until the dike is built.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 14, 1871.

DEAR SIR: No information has yet been received at the War Department from the district attorney or other United States officer respecting the removal of the injunction on the Du Luth Canal.

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Regarding the dike, it is expected that its plan and construction will be subject to the approval of the Secretary of War, and for that reason an authoritative communication to him, exhibiting plans and mode of construction, should be made at the earliest day practicable. The project should provide for such inspection of the dike by officers of the Engineer Department, during and after construction, as the Secretary of War may direct, so as to insure an adherence to the proposed plan.

Very respectfully, your obedient sevant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

J. J. EGAN, Esq.,
Attorney for the Town of Du Luth, Du Luth.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 14, 1871.

MAJOR: You will please submit, at the earliest practicable time, a plan, with estimates of cost, for the construction of a dike across the head of Superior Bay, and the best location for it, so as to prevent the waters of that bay and of Saint Louis River passing to Lake Superior through the Du Luth Canal.

The report should contain all the information necessary to a full discussion of the subject, such as the differences of level (under normal and abnormal conditions) of the mouth of Saint Louis River; of the Bay of Superior, at several points of its length; and of Lake Superior—the varying force and direction of currents, &c.; the necessity for gates or openings in the dike for the passage of vessels; how they should be constructed, if indispensable; the objections to using openings or gates or locks; in what manner the use of gates or openings may be obviated or rendered unnecessary; and such other matters as, in your judgment, may be necessary for the full elucidation of the subject.

By command of Brigadier General Humphreys.

Very respectfully, your obedient servant,

JOHN G. PARKE,
Major of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, Chicago, Illinois.

SUPERIOR, WISCONSIN, *July* 26, 1871.

DEAR SIR: Your favor of the 15th instant was received some days since, but I could not reply sooner.

The theory of the Chief of Engineers, "that the plan of improvement at Superior Entry would cause temporary low or shallow water over the bar during the progress of the work, which would be obviated after completion," is well understood here, and we have constantly expected it, and have experienced it when the work was in progress; indeed, we have noticed it, to some extent, every time a new crib was sunk; but whenever work was suspended for a time the current would speedily form its new bed, and thereafter remain unchanged until further cribs were sunk.

In the case complained of, the facts are, that work was suspended last October; that after that time the current cut a new bed across the bar; that that bed was gradually deepening by the abrasion of the current during the whole winter and up to the day of cutting the canal:

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that no work was done on the harbor improvement from October, 1870, till June, 1871; that no work was done in 1871 until several weeks after the injury alleged to be caused by the canal; that on the day that the canal was cut through to the depth of 16 feet, (before the cutting was completed,) there was 9 feet and 10 inches of water in the channel at the entry formed in October, 1870; that the cutting in the canal was completed to the depth of 16 feet at about 7 p. m. of that day; that on the third day thereafter the water in that channel, the entry, had shoaled to 7 feet and 6 inches, and that no storm occurred in those three days to assist in shoaling the water. These are facts susceptible of proof, and the inference is irresistible that the immediate cause of the shoal water was the cutting of the canal, engineer's theories to the contrary notwithstanding.

I might elaborate upon the reasons of this action of the water, but I presume you desire only the facts, and I refrain from theorizing.

Now you will see that the Chief of Engineers bases his opinion upon the supposition that cribs had been sunk this spring, while the truth is that no cribs had been sunk in seven or eight months, and therefore his very pretty theory fails.

Very respectfully,

GEO. W. PERRY.

Hon. MATT H. CARPENTER, *Milwaukee.*

Indorsement on communication of George W. Perry addressed to Hon. Matt. H. Carpenter, relative to improvement at Superior Harbor:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., August 12, 1871.

Respectfully referred to Major Houston, who will please inquire into and report upon the statements contained within, especially those inclosed by pencil-mark. It will be noted that Mr Perry states positively that on the day the canal at Du Luth was opened there was 9 feet 10 inches water in the channel of Superior entrance; that in three days afterward there was but 7 feet 6 inches in the same channel. In other words, that in three days the Superior Channel had filled in 2 feet 4 inches, and that no storm occurred during those three days. Who measured the depths in the channel, and in what manner they were measured should also be ascertained.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

SUPERIOR CITY, WISCONSIN, *August* 23, 1871.

MAJOR: In accordance with your indorsement of August 14, 1871, on Mr. Perry's letter of July 26, 1871, I have the honor to report that I have ascertained from Mr. Perry that his authority for stating that the water in the entry "had shoaled to 7 feet 6 inches" was the information given him by persons who were on the steamer Keweenaw, on the 8th of June last. This vessel attempted on that day to come in at the entry, and sent men in a small boat to sound with a pole. I am informed by Mr. Robbins, who was one of the passengers on the Keweenaw, that the result of their soundings was reported as from 7 to 8 feet of water. I have no means of ascertaining whether these soundings were taken in the most favorable water or on the bar, nor whether the sounding-pole was properly worked. I have never been able to find the water so shallow as this when looking for the most favorable or channel-

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water. The direction of the Minnesota pier is such that in extending it the channel—that is, the former channel—has been crossed; but even now there is an 8-foot channel along the Minnesota pier. The extension of the Minnesota pier has caused the current to cut a new channel on the Wisconsin or east side of the entry. This channel has had 9 feet of water in it for about six weeks. A severe blow on the 19th instant, however, shoaled this up to about 8½ feet of water in the shoalest part. The work at this harbor is in such a state now that the current feels and shows the effect of every additional crib sunk on the Wisconsin pier; and until this pier has been carried across the bar, the channel will be continually changing. I have stated this to show that it would have been a very easy matter for a boat, sounding for the channel, to miss it entirely, especially if the captain were not very anxious to find it.

Work on this harbor was not closed until December, 1870, and not in October, as stated by Mr. Perry. The first cribs sunk this season were accepted on the 16th of June. The cutting of the canal at Du Luth has never been completed to 16 feet of water. The cut has been deepened on the bay side to 16 feet, but it has not yet been carried through to this depth, so that this sudden shoaling spoken of by Mr. Perry cannot be attributed to the fact that the "canal was cut through to the depth of 16 feet." If the state of the channel was such as stated by Mr. Perry on the 8th of June, it could have remained so but a very short time, as it has never been so since. I think that Mr. Perry has been misinformed. The water on the 8th of June was but one-tenth of a foot lower than the average. There was 9 feet of water in the channel on the 10th of June, for I had the dredge at work in that depth, and cut a trench to 12 feet of water across the channel; that is, for a distance of 100 feet in prolongation of the pier.

Very respectfully, your obedient servant,

A. M. MILLER,
First Lieutenant, Corps of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, U. S. Army, Chicago, Illinois.

A true copy.

D. C. HOUSTON,
Major of Engineers.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., August 17, 1871.

MAJOR: The letter to you of the 14th July, 1871, from this office, called for the location of the dike across the head of Superior Bay, as well as its plan and estimate of cost. Your letter of the 12th instant submits only a plan of a dike, with a bill of materials.

Your attention is called to this omission, and you will please submit a plan of such location for a dike as will be most suitable for the commerce of Du Luth, both exteriorly and interiorly, and at the same time an estimate of its cost.

Very respectfully, your obedient servant,

By command of Brigadier General Humphreys:

THOS. LINCOLN CASEY,
Major of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, Chicago, Illinois.

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UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, August 17, 1871.

GENERAL: I have the honor to acknowledge the receipt of your letter of the 17th instant, calling for location of a dike across the Bay of Superior, "as will be most suitable to the commerce of Du Luth, both exteriorly and interiorly," and at the same time an estimate of its cost.

As stated in my letter of July 31, I recommended "that an opening of 150 feet be left in the dike, and that the question of putting in gates be deferred until the effect of high water is observed." By placing the dike in the position indicated on the accompanying sketch, or nearly there, the distance from the mouth of the Saint Louis River to the canal, by way of the opening, is about 2¼ miles, and the effect of the canal in diverting the waters of the river is much less than if placed farther north, with an opening left, as the slope would be less. The same state of things would exist if the dike were placed immediately south of the canal, and the opening left near Rice's Point, but this would contract the inner harbor of Du Luth, and shut out, except by a long circuit, the establishments (existing and future) on Minnesota Point, south of the canal. If the dike were placed at the position last mentioned, and an opening left near Minnesota Point, the dike would have no effect whatever in keeping the current of the river from the canal. If gates were to be put in the dike this season it would make no difference where the dike was placed, (between the two extreme positions above mentioned,) so far as its object is to prevent the waters of the Saint Louis River, in time of high water, from being diverted through the canal, but with an opening, the farther south the better. The location of the dike, as given on the sketch, affords the amplest accommodations for the interior or principal harbor of Du Luth, assuming that the canal will be completed. I am informed that all the land at the north end of the bay, and also Rice's Point, belongs to or is controlled by the railroad companies, leaving only the water front on Minnesota Point for development by private parties. For this reason, also, the best location for the dike, as relates to the harbor of Du Luth, is as given.

Again, the length of the proposed location is a minimum. It will be impossible to locate this dike anywhere so that some one will not object to it. Wherever it is placed it will be in the way, to a greater or less extent. The Bay of Superior is navigable nearly everywhere for light draught vessels, and logs are brought down the Saint Louis River to the mills at Du Luth, over the site of the proposed dike. If the dike is not imperatively needed, it would be better not to put it in; and I feel very doubtful of its necessity after the extension of the piers at Superior entry to deep water, which I anticipate will be the case at the close of this season.

The observations on currents at the entry, canal, and north of the Saint Louis River show that at the present stage of water in the Saint Louis River the canal has no detrimental influence on the entry. No deflection of the current to the canal can occur except in time of freshets, and it would be well, if it can be done, to defer all action in this matter until next season, and take steps to carefully watch the effects of the spring freshets. The maintenance of the channel at the entry, after the extension of the piers, will depend mainly, I think, upon the ebb and flow of the lake, which seems daily and oftener. At all events, whatever possible injury may happen to the entry by this experiment for one season can be easily cured by a dredge, and the remedy of a dike afterward applied, while we may find that the dike is unnecessary, and a serious inconvenience and great expense will be avoided.

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I inclose herewith tracing from lake survey, map of the Bay of Superior, giving my view of a suitable location for this dike, with estimate of cost per running foot, as follows:

Estimated cost of 200 feet of dike.

200 linear feet of pine timber, 12 by 15, at 25 cents	$50 00
200 linear feet of oak timber, 6 by 12 inches, at $30 per M feet, cubic measure	36 00
20,800 feet board-measure, pine sheet-piling, at $20 per M feet	416 00
25 pine piles, 1 foot diameter at middle point and 30 feet long, at $6	150 00
Driving 25 round piles, at $1.50 each	37 50
Driving 266 sheet-piles, at $1	266 00
372 pounds of iron drift-bolts, at 5 cents	18 60
560 pounds of iron spikes, at 6 cents	33 60
	1,007 70
Contingencies	192 30
	1,200 00

Cost per running foot, $6.
Total cost of dike, 5,683 feet, $34,098.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., August 25, 1871.

SIR: In reference to the communication of the 18th instant, from the Department of Justice, concerning the bond of the city of Du Luth, suggesting that specifications should be obtained from this office, showing the kind, form, and dimensions of the dike across the Bay of Superior, as agreed upon, to be inserted in such bond, I beg to reply that I requested Mr. Egan, attorney for the city of Du Luth, to have this office furnished with the plan of the dike the city is to build, but it has not yet been received here.

Major Houston, Corps of Engineers, in charge of harbor works on Lake Superior, has, by my direction, submitted a plan and estimate of cost for the construction of the dike, but it would not be judicious to require the city of Du Luth to build the dike in the manner proposed by Major Houston, since some other method of construction might be more useful for their purposes and equally effective for those of the United States.

I would recommend, therefore, that the bond specify merely that the dike shall be built in a substantial manner and to the satisfaction of the Secretary of War, and shall be completed not later than the 1st of December next, the Secretary of War to be furnished with a plan of the same, and to be authorized to have the dike inspected at any time by an officer of United States Engineers.

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The bond should be given for the construction of the dike only, and not for the completion of the canal across Minnesota Point, all reference to the time or manner of completion of which should be omitted.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, August 25, 1871.

GENERAL: I have the honor to acknowledge the receipt of your letter of the 23d instant, returning my letter of the 17th instant, with sketch giving location of dike across Superior Bay, for further explanations.

I inclose herewith the report and sketch amended as called for.

I would state that I have written this day to my assistant at Superior City for a report of the observations in currents, &c., made in pursuance of your letter of July 14, 1871; and also his statement in reply to letter of George W. Perry to Hon. Matt. H. Carpenter, which was sent to Lieutenant Miller on the 14th instant.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

DU LUTH, MINNESOTA, *September* 2, 1871.

DEAR GENERAL: I have delayed communicating with you during the past month, for the reason that no actual work had been commenced on the dike and I was averse to making any excuses. The work is now begun, however, contracts let, and piles driven as speedily as possible. The work is intended to be completed within sixty days. The reason for delay heretofore has been negotiations pending between Northern Pacific Railroad Company and the city of Du Luth concerning where the money was to come from for the completion of harbor improvements at this place. These have been fully settled very recently. The city turns over the canal to the Northern Pacific Company; and it takes exclusive charge of its construction hereafter, paying all expenses and increasing the width to 250 feet. The city goes on with the dike in its own name, as above. There are to be two locks on the dike, of 100 feet in width each, although one of the locks is imperfectly designated on the accompanying tracing. What would you think of constructing the dike to within a quarter of a mile of Minnesota Point, and there stopping, leaving that space for a good large channel? It would save considerable expense and be preferable to all rival interests if it would have the same effect. We think it would, and hope you will write me what you think of the subject.

We wish to meet your approbation in these matters, and shall comply in good faith with our bond to the Government and with any suggestions you may be pleased to make.

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Inclosed find tracing of official plan of dike, &c., with letter of city engineer.

Yours, very respectfully,

J. J. EGAN,
City Attorney of Du Luth.

Brigadier General A. A. HUMPHREYS,
Washington, D. C.

CITY ENGINEER'S OFFICE,
Du Luth, September 1, 1871.

DEAR SIR: The plan for the dike to be constructed across Superior Bay, from Minnesota Point to Rice's Point, pursuant to the requirements of the United States Government, as adopted by the city council August 29, consists of a single row of piles at least 16 inches in diameter at the top, to be driven 10 feet apart, with double caps 6 by 12 inches, firmly bolted on by 1-inch screw-bolts, and sheet-piling of 4-inch plank driven between and spiked or drift-bolted to the caps, as per accompanying plan.

Yours, respectfully,

C. G. FRANKLIN,
City Engineer.

J. J. EGAN, Esq.,
City Attorney.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., September 9, 1871.

SIR: Your letter of September 2, inclosing a plan for the dike to be constructed across the Bay of Superior, from Minnesota Point to Rice's Point, has been received.

In order that the dike shall properly serve the purpose for which it was designed, it should be made a continuous structure from shore to shore, and not left with any opening whatever. If a passage-way through the dike is necessary, this must be made in the form of a lock, and so arranged as to exclude from the Du Luth Canal, at all seasons of the year, the volume of discharge of the Saint Louis River, and also the reservoir flow of Superior Bay and its connections, excepting such part of that bay above the southern extremity of Rice's Point known as the harbor of Du Luth.

The plan of construction will answer sufficiently well for a temporary dike, but to give permanency to the structure the piling should be strengthened by an earth-filling.

Respecting the site of the dike, it is said that it should be so placed as to cause the least injury or inconvenience to the commerce and navigation of Superior Bay and Du Luth Harbor. The object sought to be attained by the War Department, in requiring its construction, is the permanent maintenance of the same volume of discharge, at all seasons of the year, through the natural entrance that existed before the canal was cut through Minnesota Point. That object would be attained if the dike were placed across the bay in close proximity to the canal, and it would also be obtained substantially by the location proposed in your letter.

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I do not consider it incumbent upon me to advise as to a choice of situation within those limits. The local authorities must make their own selection, subject to the revision of such tribunals as may have authority to decide in any conflict of interests that may grow out of a choice of location.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

J. J. EGAN, Esq.,
City Attorney of Du Luth, Minnesota.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., October 27, 1871.

MAJOR: The Chief of Engineers directs that just before the close of the working season a thorough and full inspection and examination be made of the works of improvement at Superior City Harbor, and a report be submitted setting forth the condition of the works and of the channel at the entrance, giving the soundings and showing what changes, if any, have been produced since the commencement of the present working season, not only as to depth of water in channel, but as to its location, and also the velocity of the current, and the rise and fall of the lake. It is desired that this inspection should embrace the cut made through Minnesota Point and the dike being built in connection therewith; and the report should set forth the progress made during the season and condition of these two works, and as far as possible the effects produced by their construction in the force and direction of the currents, not only through the canal or cut, but also through the Superior City opening.

With the results of this examination and report, you are requested to give your views in full on the above points, and such others as may occur to you in the discussion of the question of the improvement of Superior City Harbor and the harbor of Du Luth.

Very respectfully, your obedient servant,

JNO. G. PARKE,
Major of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, Chicago, Illinois.

Report of operations at Superior City, Wisconsin, for the month of October, 1871.

There have been sunk three cribs on the Minnesota pier, making an addition of 96 feet of pier-work built to water surface, and extending to the 12-foot curve in lake.

Six cribs have been sunk on the Wisconsin pier, making an addition of 192 feet of pier-work to water surface.

The Wisconsin pier requires an extension of 800 feet to make it as long as the Minnesota pier, but an extension of 400 feet will carry it over the bar. A comparison between soundings taken July 7 and October 21, 1871, does not show any marked change in the channel between the lines of the piers.

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The last report, October 28, gives 8 feet 6 inches of water on the bar in this channel, which is as much as is shown by any survey.

A survey will be made about the close of operations, showing condition of channel between piers. Should weather prove favorable, the Wisconsin pier may be extended far enough to show full effects of spring freshets on the new channel.

Work performed under contract with Schutte & Ritchie, dated May 27, 1871.

Probable operations for the month of November, 1871, continuing work as far as possible on Wisconsin pier.

Respectfully submitted.

D. C. HOUSTON,
Major of Engineers.

UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, November 22, 1871.

GENERAL: I have the honor to forward herewith a record of observations taken at the head of Lake Superior on the 9th, 10th, 11th, and 12th of August, 1871; also, profiles showing fluctuations of the lake-level on the same dates.

The observations show the direction and velocity of the currents and the tide-gauge readings at the entry of Superior Bay, the Du Luth canal, and the mouth of the Saint Louis River; the readings of the barometer at Superior City and Du Luth, and the velocity and direction of the wind at Du Luth.

The observations were taken every fifteen minutes, between the hours of 5 a. m. and 7 p. m., simultaneously at each point of observation.

The zeros of the tide-gauges at the three points are different, but the mean reading of all the observations for each point is given. The tide-gauge at the entry was on the north pier at Du Luth, on the breakwater, and at Saint Louis River, at the mouth of the river. The barometers could not be compared, as that at Du Luth belonged to the United States signal-station, and the one at Superior was private property.

Observations on currents were also taken on the Nemadji River, but these were lost.

I inclose also cross-sections of the entry, the canal, and the mouth of the Saint Louis River. A series of observations of the currents and tide-gauges has also been kept during the season at the entry and canal, the currents being observed twice a day and the tide-gauges three times a day; these are not yet complete.

The observations on the four consecutive days above mentioned show the character of the currents and the fluctuations of the lake.

After a careful examination of these observations, I conclude that at the season they were taken the currents and tide-gauges were affected by the amount of water discharged by the Saint Louis River. The point taken as the mouth of this river, however, is not properly its mouth, although it is the point where its waters are discharged into the Bay of Superior; for above this point we find the Saint Louis Bay separated from the Bay of Superior by Rice's Point, which was evidently formed before Minnesota Point, and in a similar manner. An inspection of the observations shows that the current at this point is principally caused by the currents at the canal and entry, the velocity being much less than at either of the latter points.

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The changes in the direction of the current are also less frequent than at either outlet of the bay, as it is not immediately influenced by the oscillations of the lake.

There is no regularity in the currents at either the entry or the canal. At times the current runs in at both points, at others it runs out at both; and again, it runs in at one point and out of the other. The number of changes of direction in the currents varies. The greatest number of changes in direction at the entry in a day was fourteen; the least, four; at the canal the greatest, thirteen; the least, eight.

At the mouth of the Saint Louis River the greatest number of changes was eight; the least, two. The greatest velocity of the current at the entry was three and one-tenth miles per hour running in; at the canal, three and four-tenths miles per hour running in; at the mouth of the river, three-fourths mile per hour running in; the direction of the currents does not seem to be much affected by the wind, or to correspond in any way with the barometer reading.

The records of the season show this same state of things, though with not so much minuteness. The irregularities in the tide-gauge is probably attributable in part to the waves; but the change in the currents must be explained by the oscillation of the lake surface. This oscillation seems due to the following causes, each independent of the other. The varying pressure of the atmosphere, as indicated by the barometer at different ends of the lake, would cause a rise at the end where the pressure was last, and a long wave corresponding to the varying pressure. In this way the so-called tidal waves where the water rises suddenly two, three, or more feet, may be accounted for.

Two of these unusual waves have been noticed at Green Bay this season. Second, strong winds in one portion of the lake transmit to a distance a long swell independent of the local waves. Third, the attraction of the sun and moon, and the rotation of earth upon its axis. The peculiar configuration of Lake Superior would cause a tide to be unusually high at its west end.

The tidal phenomena produced by the moon's attraction upon an isolated body of water like Lake Superior would necessarily be different from those on the ocean.

As the moon approaches the meridian of the eastern end of the lake, the waters would be drawn to the east with a force due to the difference in distance from the moon to the east and west ends of the lake. When, or shortly after, the moon reaches this meridian, the water at the east end of the lake will have attained its minimum elevation due to this cause, and as the moon moves westward (to use popular language) the crest of the wave will follow it until the western extremity of the lake is reached. The time between the moon's transits at these two meridians is not far from twenty minutes, which would be the time for the wave to pass the length of the lake, or at the rate of about one thousand miles per hour. As the moon passes to the westward its influence diminishes, and a reflex wave occurs from west to east, and then from east to west, producing a continuous oscillation of the lake's surface. The law of this oscillation could only be determined by the most careful and prolonged series of observations.

I am unable to account for the continual vibration of the lake level at this point without calling in this agency. It will be observed that on the first day of the observations the wind was from the east, on the second day from the west, and on the two last days from the east, yet the fluctuations on the lake level and the directions of the current go on the same.

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So far as these observations bear on the question of the Du Luth Canal, its effect upon the entry and the necessity of a dike to prevent the waters of the Saint Louis River from passing through the canal and thus diminishing the scouring effect necessary to maintain the proper depth of water at the entry, they seem to show that, except in times of high water in the Saint Louis River sufficient to overcome the lake influence, the canal would have no effect whatever on the entry, as the current, both through it and the entry, is dependent entirely upon the rise and fall of the lake, the amount of water which is discharged from the Saint Louis River during the low-water season being insignificant compared with the ebb and flow of the lake. In time of freshets the cause is different. I have no record of the amount of water discharged by the Saint Louis River at such times, but the lake-survey chart shows deep water at the mouth of the river, and a deep, narrow channel in the bay from the mouth of the natural entry, which I conceive to have been caused by the scour of the current from the river.

Now, if a canal had been opened on the site of the present canal through Minnesota Point, before the works of improvement had been commenced at the entry, or while those works were in the condition they were when the canal was commenced, of the width proposed, viz, 250 feet, I have no doubt that the result would have been detrimental to the entry, which depended for its depth of water upon the annual scour from the river. That this scouring effect would have been diminished by making a new outlet into the lake 250 feet in width and three miles nearer the mouth of the Saint Louis River than the entry, requires no demonstration, for it is proved by experience in similar instances on Lake Michigan.

But a different state of things now exists; the piers at the entry have been extended out nearly to the deep water of the lake, and vessels drawing 8 feet 6 inches can now enter the harbor. No dredging has yet been done, though it was originally estimated that dredging would be necessary. I think it probable that next spring the effect of the freshets will be to deepen the channel considerably. Should the channel between the piers freeze over the coming winter to a thickness of 4 or 5 feet, as frequently occurs, the effect will be to confine the current so that a considerable scouring effect may be expected from the ebb and flow of the lake.

The canal at present is not large enough to carry off much water; and in the present condition of the piers it is probable that its mouth will close up during the winter. If a channel is once secured at the entry, either by the action of the current or by dredging, the current caused by the ebb and flow of the lake ought to maintain it.

If we suppose the two entrances excavated to the proper depth, and properly protected by piers, the question may be discussed without reference to the Saint Louis, which we may regard as not existing. The case becomes then similar to a great tidal harbor, the entrance to which is maintained by the tidal currents.

I do not think that a dike will be necessary. No injury to the entry has yet occurred due to the canal; and with the piers extended as they are now, I cannot see that any injury can occur.

If the canal were completed, the effect would be, of course, to diminish the scouring effect of the current next season, but such is not the case; and before it is completed the channel at the entry will be deepened to the necessary depth.

There is one point in connection with this canal and the breakwater at Du Luth which may demand future attention. The process by which

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Minnesota Point has been formed has been arrested by the breakwater. The shingle which was formerly drifted along the shore and deposited on Minnesota Point is now caught by the breakwater; the canal also isolates that portion of the point south of it, forming an island which is now deprived of its former accretion, and it is exposed to the destructive action of the lake. I mention this because fears have been entertained that the portion of the point south of the canal, being deprived of the constant supply of material, might wash away. These fears are not without foundation, as it is seen here at Chicago and vicinity, where the lake drift caused by northeasterly storms is southward, that when a pier is built out into the lake and the drift arrested, the shore to the south is cut away and works of some kind are necessary to protect it. Large amounts of money have been expended in such protections on the lake front of Chicago south of the harbor. The material here, however, is sand, while on Minnesota Point it is coarse gravel, and not so liable to be affected by storms.

The large interests which have centered themselves at Du Luth, in apparent defiance of the natural features of the country, render necessary a good harbor at that point; and the best and most economical way of securing a harbor there is by a canal through Minnesota Point. This canal has already been excavated, so that vessels drawing 5 feet can pass through. The north side of the canal is revetted with cribwork, and the north pier extended out to a depth of 16 feet of water in the lake.

The character of the material of which the point is composed (coarse gravel) is highly favorable to the maintenance of the channel after the piers are built.

Inside the bay all the room required can be obtained by dredging 3 or 4 feet in soft material.

The further extension of the breakwater will be expensive, owing to the great depth of water. The extension now in progress is sufficient to protect vessels lying at the docks of the railroad company on the lake shore. I understand that it is not the intention of the railroad to construct any more docks on the lake shore, but to have them in the bay. This being the case, there seems no object in extending the breakwater any farther, as all vessels, except those now going to the railroad docks, will either go through canal or entry.

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, Washington, D. C.

P. S.—Surveys of the entry and canal have been made by Lieutenant Miller, Corps of Engineers, and will be forwarded, as soon as possible, in compliance with your letter of October 27, 1871.

Respectfully submitted.

D. C. HOUSTON,
Major of Engineers.

DU LUTH, MINNESOTA, *November* 14, 1871.

DEAR SIR: The dike has so far progressed that the piling has been completed between Minnesota and Rice's Point, and sheet-piling finished for one-fourth of the entire distance, also capping all on ready for sheet-piling the balance. Pursuant to a former communication from you, suggesting the temporary character of present plan, the engineer in charge

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is driving a line of spiles on each side 10 feet parallel from dike and 30 feet apart, these spiles to be capped at right angles with dike, and diagonal braces to be put in. All measures will be adopted to make it permanent as the work progresses. The weather has not been favorable to continue work this season, westerly winds prevailing a good deal of the time. Every effort has been made to have the work completed within the time specified in our bond, but it is hardly possible, under existing circumstances, and the changes for permanency made. The city council have, therefore, requested me to respectfully request you to allow us until the 1st day of April, A. D. 1872, to complete the work. The bay will freeze over within a week, and until the time above specified no diversion or injury to Government works at entry can occur. In winter more progress can be made than heretofore. On account of your courteous treatment of our community, and impartiality in matters affecting the public interests of this place, as well as for their own reputation, the city regrets the probable non-completion of the work by the 1st of December. On behalf of the city of Du Luth, I therefore respectfully ask that the above extension be allowed, and I can assure you that the city will in the future, as in the past, endeavor to act in good faith with and abide by the commands and suggestion of your Bureau in this enterprise.

Yours, very respectfully,

J. J. EGAN,
City Attorney.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

Indorsement on request of J. J. Egan, esq., for extension of time for completion of dike at Du Luth:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., November 24, 1871.

Respectfully submitted to the honorable Secretary of War.

The object to be attained by the construction of this dike is to prevent the waters from Saint Louis River flowing through the canal made by the city of Du Luth across Minnesota Point, instead of through the natural outlet at Superior City; and as the scouring or deepening of the bar at the Superior City entry is greater during the season of freshets or high water in the streams flowing into the Bay of Superior, it is believed that if the dike is thoroughly completed by the commencement of the season of spring freshets no damage will result to the works of the United States at the entrance to the harbor of Superior City, nor will the depth of the water on the bar be diminished in consequence of the non-completion of the dike on the day named in the bond, *i. e.*, December 1, 1871.

For these reasons, together with the statement within, "that every effort has been made to have the work completed within the time specified," I would recommend that the period be extended to March 15, 1872, which is substantially in accordance with the request of the authorities of the city of Du Luth.

Should the recommendation meet the approval of the Secretary of War, it is suggested that a copy of the communication be furnished the district attorney for Minnesota through the Department of Justice.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Approved by the Secretary of War December 5, 1871.

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., December 13, 1871.

SIR: Your letter of November 14, requesting, on behalf of the city of Du Luth, that the time for the completion of the dike between Minnesota and Rice's Points from December 1, 1871, to April 1, 1872, has been received.

I have to inform you that, upon the recommendation of the Chief of Engineers, the Secretary of War has approved the extension of the time for completion to March 15, 1872, and that the Department of Justice has been notified thereof.

By command of Brigadier General Humphreys.

Very respectfully, your obedient servant,

JNO. G. PARKE,
Major of Engineers.

J. J. EGAN, Esq.,
Attorney for City of Du Luth, Du Luth, Minnesota.

Hon. WILLIAM W. BELKNAP, *Secretary of War:*

The undersigned, citizens of Superior, Wisconsin, respectfully represent—

That within the year last past the city of Du Luth, in Minnesota, has caused a canal to be excavated through Minnesota Point at Du Luth, whereby the ordinary head of water in the Bay of Superior is materially lowered, and consequently the outflow of water and the scouring force of the current at the natural mouth of the Saint Louis River—locally termed the "entry"—between Minnesota Point and Wisconsin Point, is greatly diminished.

That in the last spring, very soon after the opening of said canal and before the Government work at the "entry" had been commenced for this season, a remarkable shoaling took place at the "entry," seriously obstructing navigation between Lake Superior and the Bay of Superior; and no circumstance preceded or accompanied such shoaling to account for the same, except the diversion of a portion of the waters of the Saint Louis River through the new outlet at said canal and the consequent reduction of the force of the river current at the "entry," a force which nature has opposed to the undue accumulation of lake sands on the bar at that point; and that the bar at the "entry" has never, during any former season, been so troublesome as it has been during the present season since the opening of said canal; that a deflection of a portion of the current of the Saint Louis River between the "gate" and the "entry" has also been observed, the current turning in part from Rice's Point northerly to the canal, instead of running only southerly to the "entry," as heretofore, seriously threatening a total diversion of the wonted channel at an early day. This diversion is so obviously caused by the canal that we need not again here assert it.

That work on said canal was prosecuted with full notice on the part of the city of Du Luth that, in the opinion of the United States engineers, the opening of such a canal would injuriously affect the natural entry, and defeat the objects of the Government improvements at that point.

That the interests of citizens of Wisconsin and of property-holders at Superior are seriously prejudiced, and their vested rights infringed, by any cause which permanently renders more difficult the navigation of

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the "entry," the natural channel of communication between the bay and the lake.

That when the "entry" shall have been improved and perfected by the Government works now in progress there, if the effects sought shall not be defeated by the said canal, the Bay of Superior will be fully available to Du Luth, as well as to Superior, as a harbor for all commercial and marine uses, as the engineers having those works in charge have officially declared.

That heretofore, within the present year, a suit was commenced by the United States, in the circuit court of the United States, against the city of Du Luth and others, to restrain the construction of said canal, on the ground that the same, as declared by the War Department, was injurious to interests at the entry which the Government was bound to protect. That the interest of Wisconsin and the people of Superior, in said suit, was recognized by the Government by engaging Hon. Matt. H. Carpenter, the advocate of those interests, to appear in said suit as counsel for the United States, and on the retainer, as we are informed, of the State of Wisconsin. That upon a motion made before Judge Miller, at Topeka—the defendant, the city of Du Luth, appearing and strenuously opposing—upon the merits of the case as exhibited by affidavits read on both sides, a provisional injunction was granted restraining the defendants from further prosecuting the work on said canal, thus justifying the Government's action in the matter, and sustaining its claim, that the injury resulting to the "entry" from the canal was constant and imminent, and such as to demand the immediate discontinuance of the work on the latter. That, thereupon, the attorney for the city of Du Luth repaired immediately to Washington, and there, in company with Mr. Jay Cooke, made application at some Bureau of the War Department to have said injunction suspended, upon the execution of the city of Du Luth of a bond to the United States, in the penal sum of $100,000, conditioned that said city should, on or before the 1st day of December, 1871, build a dike across the Bay of Superior, from Rice's Point to Minnesota Point, and should also complete the said canal.

That said application was entertained without any notice of the same having been given to any person in Superior or Wisconsin whose rights and interests were most gravely involved in the proposed action of the Department, and, so far as we are informed, without any notice to any attorney or counsel concerned for those rights and interests.

That said application was at once granted, and an order from the Department issued directing that said injunction be suspended upon the execution by the city of Du Luth of the bond aforesaid.

That this action of the War Department (and we so declare with entire respect for its high functions and authority) has ever been regarded by the undersigned, and by the people of Wisconsin familiar with the case, as an oppressive and unwarrantable grievance, which officers of the Government would not wantonly inflict, and which could only come from a misapprehension of the situation here as regards the various interests concerned for the integrity of the harbor system at the head of Lake Superior.

That if any such dike across the Bay of Superior (which is, by nature and law, navigable water, free and open to all commerce) is admissible at all—and we protest that it is not—it should be located not further from the head of the bay than would be necessary to include the canal, (if that should, under any circumstances, be tolerated,) and accomplish its professed purpose, viz, the prevention of the diversion of the waters of the Saint Louis River from the "entry" to the canal; and it should

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be an entirely close and solid dam, impervious to water, and without any openings for the passage of boats, in order to prevent such diversion. And we humbly conceive that if the canal project is to be persisted in under any conditions whatever, the best possible, and the only adequate, security for the building of a proper and sufficient dike is the operative subsistence of a judicial injunction that shall stay work upon and close the canal until the dike shall be completed.

That a few weeks last past the city of Du Luth has been engaged in an attempt to construct—professedly pursuant to said bond—an obstruction to navigation, though not to water, called a dike, across the Bay of Superior, on a line distant more than a mile below the said canal, where the same, if completed so as to answer the requirement of the bond, will seriously obstruct an already important and rapidly increasing commerce on the Bay of Superior, between Superior and Du Luth, and will operate in a great degree as a barrier to the convenient access of the people of Superior to the Lake Superior and Mississippi Railroad at Du Luth—a railroad that would not have been in existence to-day but for the munificent land-grant given by the whole people to aid in its construction, and which, therefore, we cannot recognize the right of any one practically to shut out from any portion of the people. But the said dike is only, as it were, just begun, and is in no wise near to completion, though the 1st of December is close at hand, and no other measures are being taken to prevent the injurious effects of said canal; and the work hitherto done upon the dike is of a character which foretokens only a sham and insubstantial structure, that might, indeed, work great damage as a hinderance to navigation, but would be quite ineffectual to avert those evils, the prevention of which is the only ground for its construction.

That Superior is and ever has been a point of great prominence in the railroad system of Wisconsin, and that a number of very important railway lines terminating at that place are projected; and that responsible parties are already under contract to construct a railroad to connect Superior with the Northern Pacific Railroad at the latter's point of junction with the Lake Superior and Mississippi Railroad within eighteen months from the 1st day of January, 1872, so that there now is and will be increased and increasing occasion for the use of the best commercial facilities which our local situation naturally affords and entitles us to.

Wherefore we do most respectfully and earnestly protest against any recognition on the part of the General Government or its officers of any right in the city of Du Luth, or any other party, to construct either a canal through Minnesota Point or a dike across the Bay of Superior; and we respectfully insist that, having a natural and legal right to the free navigation of Lake Superior through the entry at the mouth of the Saint Louis River, and to the free navigation of the Bay of Superior in its whole length and breadth, we ought not to be compelled to surrender either right as the price of enjoying the other. And we also respectfully insist that in any proceeding which may have the effect to abridge in any degree our rights in this regard, we ought to be heard, and especially where the proceeding is taken on the application of a party adversely interested.

And believing that there is not for the canal, and therefore, of course, not for the dike, any warrant growing out of any needs of Du Luth properly recognizable by the Government, as we think can be made to appear upon an impartial hearing of all the facts of the case; and confident that, be the local needs of that place what they may, they should be

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subordinated to the vested rights of other communities and to the general interests of commerce, we respectfully and urgently ask your honorable Department that the legal proceedings in the name of the United States, which have been intermitted, may be again revived, to the end that further work upon said canal may be perpetually restrained, and the canal as now existing may be forever closed, so as to prevent any diversion of the waters of the Saint Louis River, and so as to restore to the channel at the entry its natural volume and current.

And your memorialists will ever pray, &c.

WILLIAM A. SMITH,
Chairman.
JAMES COLLIER,
ANDREW SODERLAND,
Supervisors, Douglas County.
And ninety-four others.

Hon. WILLIAM W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., December 7, 1871.

SIR: The memorial of W. R. Smith and others, of Superior City, in relation to the canal and dike in course of construction by the city of Du Luth, referred to this office for report, is herewith respectfully returned.

The statement of the memorial that the entrance to Superior Bay, between Minnesota Point and Wisconsin Point, has shoaled is shown to be unfounded by the accompanying report from Colonel D. C. Houston, Corps of Engineers, who was instructed from this office to make a careful investigation into the imputed changes of that entrance, and the causes thereof. The piers building by the United States for the improvement of that entrance have been recently extended across the line of the deepest water, (the course usually followed by vessels,) and are now at or near the outer edge of the shoal, extending along the line of coast. The freshet of the coming spring will deep the new channel-way between the piers, and give a greater depth to the entrance of Superior Bay than it has ever had. In this connection see the plan adopted for the improvement of this harbor, upon which appropriations have been made and the works carried on.

In order that no portion of the flow of water through the natural entrance to Superior Bay should be diverted from it and pass through the canal across Minnesota Point, the parties opening that canal were required by the Secretary of War to construct a dike in the inner harbor of Du Luth, (head of Superior Bay,) so as to exclude from the canal the discharge of the Saint Louis River and the inflow and outflow of the reservoir volume of Superior Bay and Saint Louis Bay. This condition being fulfilled by the dike, the Secretary of War declined to impose any other condition of location, leaving the site to be determined by the wants of the local trade, and, in case of disagreement, by the courts having jurisdiction in such cases.

It is to be remarked that the question of the shoaling of the natural entrance to Superior Bay that would be caused by opening a canal or channel-way across Minnesota Point, unrestricted as to dimensions and communication with Superior Bay and Saint Louis River, is fully under-

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stood here; in fact, it was from this office that the injurious effect of such a canal was first pointed out, and from this office emanated the recommendation to impose such conditions on the construction of the canal as should restrict its communication with the interior waters and neutralize its injurious tendencies.

I can find nothing in this memorial to modify in any way the recommendations heretofore made by me to the Secretary of War upon this subject.

Copies of the following papers explanatory of the subject are herewith transmitted, viz:

Letters from the Chief of Engineers to the Secretary of War, of June 30, July 13, and August 25, 1871.

Letter of Chief of Engineers to Senator Carpenter, of September 1, 1871, with inclosures.

Letters from the Chief of Engineers to J. J. Egan, esq., city attorney of Du Luth, Minnesota, of July 14 and September 9, 1871.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Chicago, December 16, 1871.

GENERAL: I have the honor to transmit herewith a report from Lieutenant A. M. Miller, Corps of Engineers, with tracing, showing condition of Superior Bay entry, the Du Luth Canal, and dike.

The swiftest current noted during the season is 3.8 miles per hour at both the canal and entry, running in.

The greatest variation observed in the lake level during the season is: at the entry, 1.69 feet; at the canal, 1.74 feet.

The results of these examinations do not seem to affect the views presented in my letter dated November 22, 1871.

Careful observations will be made next spring, at the season of high water in the Saint Louis River, which will fully settle the question involved.

These observations will be made before any further work at the canal or entry.

It is believed that all the information called for by your letter of October 27th has been furnished.

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, Washington, D. C.

MILWAUKEE, WISCONSIN, *December* 9, 1871.

MAJOR: In pursuance of directions contained in your letter of November 8, I have the honor to submit the following as the results of my compliance with your instructions:

I arrived at Du Luth November 14, and after examining the condition

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of the breakwater and making arrangements for its protection, which arrangements were approved by you, I proceeded to Superior on the 16th of November, but, on account of prevalence of northeast winds, I was unable until Sunday, November 26, to obtain the soundings at the entry. Inclosed you will find the plot of those soundings. On November 28 I made the soundings along the line of the dike, (sketch inclosed,) and on November 29 took the soundings in the Du Luth Canal, (plot inclosed.) The soundings at the entry are referred to a tide-gauge reading of 1.80, to which I have referred all my work this season; the reference being obtained from a bench-mark, the tide-gauges being all frozen up. I was unable to refer the dike and canal soundings to any datum.

It will be seen by the soundings at the Superior entry that the results have been in vindication of the theory of that work, *i. e.*, the cutting through the bar by confining and carrying the current across it. The condition of the work and its effects can be better appreciated by a comparison of the different plots of soundings taken during the season than by a written explanation. The changes in the channel have been, first, the crossing and closing of the original channel by the extension of the Minnesota pier in 1870; the current, however, works out a new channel around the new end of this pier; then, during the season of 1871, this pier was extended 1,056 feet, carrying it over the bar and effectually closing the old ship channel. This caused a deflection of the current to the Wisconsin side, boring out a channel across the bar on that side of 9 feet of water, where previously there had been little more than 4 feet of water; the extension of the Wisconsin pier to a point within 50 feet of the outside 9-foot curve of the bar has closed this new channel. In the present channel, *i. e.*, the axis of the entry, there is a depth on the bar of 8 feet. When the work is finished, which can practically be done in one more working season, if the entire outflow of the Bay of Superior be available, I am confident that a channel of at least 12 feet will be obtained.

The sketch, showing soundings taken along the dike, also shows the condition of this work on the 28th of November. The work was very poorly executed, the post-piles not having been driven sufficiently, and the sheet-piling, what there is of it, being entirely inadequate to prevent the passage of water through it. The whole work is badly out of alignment; some parts are badly broken up and others entirely carried away. A sketch showing the method of construction was forwarded in the early part of November. It consists of a row of ordinary piles driven at intervals of 10 feet from center to center, capped with two pieces of 6 by 10 inch timber, 4 inches apart, between which is driven for sheet-piling 4-inch stuff.

The Du Luth Canal was cut through Minnesota Point in May. Since then one, and part of the time two, dredges have been constantly at work, and the work has been pushed forward energetically. The north pier of the canal has been completed on the lake side and as far as the present shore-line on the bay side to the point marked A on the sketch. The soundings show the depth of water between piers as far as completed and to within 100 feet of the bay shore-line. It is contemplated, when completed, that the canal shall have a depth of 16 feet between piers.

In your letter of the 8th November you requested my views on the points mentioned in the letter from the Engineer Department dated October 27, 1871. The effects of the cutting of the canal have not been very apparent this season, as it has been a remarkably dry one, and the streams emptying into the Bay of Superior have been very low. I am

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almost satisfied that there is a very perceptible tide at the west end of Lake Superior; it may be more perceptible there than at other points, on account of the convergence of the shores. I am led to this conclusion from the fact that the direction of the current at Superior entry changes almost regularly twice in twenty-four hours; of course, the direction of the wind exercises its influence on these changes, but not more, I think, than on ordinary ocean tides, this season, when the current has been running in from the lake, corresponding to a rising tide. I have noticed that the lake water extends farther up the bay than I ever saw it last year; this, I think, was due more to the absence of counter-currents in the bay, on account of the dry season, than any deflection of the current by the Du Luth Canal. I am of the opinion, however, that, in cases of freshet, the canal will have quite an effect in diminishing the amount of flow through the entry. The cross-section of the canal is to be 250 feet by 16 feet=4,000 square feet. The entry with a depth of 12 feet will have a cross-section of 350 feet by 12 feet=4,200 square feet. Taking a depth of 9 feet for its present cross-section, we have 350 feet by 9 feet=3,150 square feet. The distance from the mouth of the Saint Louis River to the canal is about two miles; to the entry it is about five miles. Thus it is evident that the canal will get the greater portion of the discharge of this river, which is the principal source of supply to the two points. I think the canal will take away enough water from the entry to reduce the flow to about three-fifths of its present value. These are my views with reference to the effect of the Du Luth Canal on the entry. The dike, as it stands at present, is of no value whatever, and if finished according to the plan adopted, it would have been little better. A tight dike, either a causeway or an embankment, should be substituted, with a sufficiency of tight locks to allow the free passage of vessels. If the canal is finished, and I have no doubt it will be, a further extension of the breakwater at Du Luth seems to me a useless expenditure, as it is now long enough to protect vessels lying at the railroad and elevator locks in ordinary storms. In severe ones no vessel would be able to ride at anchor inside the breakwater, as there is no room to do so, and the swell is too heavy to admit of their being moored to the docks. In severe storms vessels would be obliged to take refuge inside the canal or get out into the open lake. I think the same state of affairs would obtain were the breakwater extended a length of 2,200 feet, or even more.

Very respectfully, your obedient servant,

A. M. MILLER,
First Lieutenant, Corps of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, U. S. A., Chicago, Ill.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., December 20, 1871.

SIR: I inclose herewith extracts from a report to Colonel Houston upon the progress and condition of the dike at the head of Superior Bay, just received at this office. Neither the manner of building nor the condition of the dike is in accordance with the agreement entered into by the city of Du Luth. It should be built in the manner indicated in the extracts from Colonel Houston's report, which are inclosed, and no opening whatever can be allowed in the dike until a lock is built

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which will exclude the flow of water as effectually as a dike without any opening whatever.

Colonel Houston will be instructed to have the dike inspected monthly. and I feel constrained to say that, unless his inspections show a more satisfactory condition of the dike, and give assurance that it will be completed in a substantial and effective manner by the middle of March next, I shall be under the necessity of recommending to the Secretary of War such proceedings as, in my judgment, will secure the natural entrance against injury.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

J. J. EGAN, Esq., *Attorney City of Du Luth,*
Du Luth, Minnesota.

Extract from Lieutenant Miller's Report.

"The sketch showing soundings taken along the dike also shows the condition of that work on the 28th of November. The work was very poorly executed, the 'post piles' not having been driven sufficiently, and the sheet-piling, what there is of it, being entirely inadequate to prevent the passage of water through it. The whole work is badly out of alignment; some parts are badly broken up, and others entirely carried away. A sketch showing the method of construction was forwarded in the early part of November; it consists of a row of ordinary piles driven at intervals of 10 feet from center to center, capped with two pieces of 6 by 10 inches timber, 4 inches apart, between which is driven for sheet-piling 4-inch stuff.

* * * * * * *

The dike as it stands at present is of no value whatever, and if finished according to the plan adopted it would have been little better. A tight dike, either a causeway or an embankment, should be substituted, with a sufficiency of tight locks to allow the free passage of vessels.

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., December 20, 1871.

MAJOR: Your letter of the 16th instant, with report of Lieutenant Miller and tracing showing the condition of the entrance to Superior Bay, &c., has been received.

I inclose for your information a copy of a communication this day sent to Mr. J. J. Egan, the attorney for the city of Du Luth.

You will have monthly inspections made of the dike in course of construction at the head of Superior Bay, and report the results to this office.

By command of Brigadier General Humphreys.

Very respectfully, your obedient servant,

JNO. G. PARKE,
Major of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, Chicago, Illinois.

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UNITED STATES ENGINEER OFFICE,
Chicago, January 2, 1872.

GENERAL: I have the honor to state, the foreman at Du Luth reports to me under date of December 28, 1871, as follows:

"There has been nothing done to the dikes since November 28, 1871; the ice is lifting the piles out; it has raised them all the way from one foot to three. I think when the ice goes out in the spring it will take the dike with it."

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. Army, Washington, D. C.

STATE OF WISCONSIN, EXECUTIVE DEPARTMENT,
Madison, January 29, 1872.

DEAR SIR: The people of Superior are greatly and justly exercised in regard to their harbor. The cutting of the canal across Minnesota Point, for the purpose of diverting the waters of the Saint Louis River and destroying the harbor of Superior, was a great outrage, and Judge Miller, of the supreme court, granted an injunction to restrain it. The Secretary of War authorized a suspension of all proceedings under the injunction, upon the city of Du Luth entering into a bond to construct a close dike across from Rice Point to Minnesota Point, and thus arresting the flow of the Saint Louis River through the canal. I understand that by the terms of the bond the dike was to have been constructed before this time, but it has not been; but the city of Du Luth is now making some demonstrations toward it. If a close dike is built where it should be, I think that will satisfy the people of Superior; but the intention is to build the dike nearly one mile from the present point where steamers land in running from Superior to Du Luth, the effect of which will be to make the intercourse between the two places much more difficult than at present. If a dike is built where now contemplated, then a space should be left in it to be opened and closed in the gates. I don't know whether you have ever been at Superior or not. If you have, you will fully understand the question. While I feel that I ought to insist to the last in the maintenance of the just rights of the people of Superior and the State, I have no disposition to claim anything inconsistent with a proper neighborly feeling which ought to exist between Minnesota and Wisconsin. What we claim is this:

1. That the canal shall be closed; or, failing in that,

2. That a close dike shall be built from near the east side of the canal to Rice Point; or,

3. A dike with gates in it, if constructed where now contemplated by the city of Du Luth. Either of these three things will be satisfactory.

I beg you to call on the Secretary of War and General Humphreys, and get them to insist upon one of these propositions being complied with by the city of Du Luth.

Respectfully, yours,

C. C. WASHBURN.

Hon. J. M. RUSK, M. C.

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., February 13, 1872.

SIR: I have respectfully to return herewith the letter from the Hon. J. M. Rusk, with its inclosure, a letter from the governor of Wisconsin, calling upon the War Department to insist upon one of three propositions in regard to the canal and projected dike at Du Luth, Minnesota, being complied with by the city of Du Luth.

In reply I beg leave to invite the attention of the Secretary of War to the communication to the city attorney of Du Luth from this office, dated September 9, 1871, a copy of which is herewith inclosed. This letter will show that the Department has uniformly abstained from giving any decision in regard either to the location or plan of constructing the dike, the only point insisted upon being that it shall be so located and constructed as "to exclude from the Du Luth Canal at all seasons of the year the volume of discharge of the Saint Louis River, and also the reservoir flow of Superior Bay and its connections, excepting such part of that bay above the southern extremity of Rice's Point, known as the harbor of Du Luth."

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

A MEMORIAL.

To the honorable Secretary of War:

The legislature of the State of Minnesota respectfully represent and memorialize your honor as follows:

That in June of last year the injunction applied for at the suit of the United States, at the city of Du Luth, to enjoin the construction of a canal through Minnesota Point, from the lake into Bay of Superior, (and which suit, it is believed, was instituted and prosecuted by, and at the expense of, the State of Wisconsin, as that State appropriated $5,000 to cover expenses of same, and which suit, it is believed, was instituted, not for the purpose of really protecting the harbor entry to Superior City, in the State of Wisconsin, so much as to prevent the construction of a harbor at Du Luth, in the State of Wisconsin,) was dissolved on condition of the said city of Du Luth entering into a bond for the construction of a dike or breakwater from Rice's Point across the bay of Superior to Minnesota Point, so as to prevent any possible diversion of the waters of the Saint Louis River through said canal.

This was done upon the authority and consent of the War Department. In disposing of the temporary injunction, Judge Miller, associate justice United States Supreme Court, thus expresses himself:

If, before the final hearing, it shall be made to appear in the manner indicated, or in any other manner satisfactory to the court, that the canal can be protected by a breakwater, so as to prevent the too rapid diversion of the water from the bay, or can, in any other manner, be completed without injury to the Government works, and if the complainants put their work in that condition the injunction may be modified or dissolved.

In conclusion, I take the liberty of saying that, since Congress has taken this matter in hand by appropriating money for the improvement of these harbors, it should cause the adoption of some comprehensive plan for the improvement of both harbors,

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and not leave it to the conflicting interest of the two cities, or to the adverse action of the State and Federal authorities.

Nor can I doubt, if the defendants here should ask for the Department in charge of these improvements a careful inquiry into the plan which they believe essential to their interests, that some mode of prosecuting such improvement would be found which would meet the approval of that Department, and obviate the necessity of a final decision by the court.

That thereupon said city of Du Luth entered into a bond of $100,000 for construction of such breakwater or dike, and immediately proceeded in the work of constructing the same, and after the expenditure of the sum of over $12,000 on said dike or breakwater, it was found that the plan adopted would not answer the purpose of its construction on account of the effect of the ice on the piles, with which said dike was being constructed. That thereupon a new plan for the construction of said dike was determined upon, to wit: A continuous line of crib-work filled with stone and ten feet in width, in the form and of the character of which Government breakwaters are built.

That thereupon an extension of time for the completion of said dike became necessary, and upon application the War Department granted such extension of time until the 15th of March, A. D. 1872.

That said city of Du Luth immediately proceeded to the work of constructing said dike or breakwater upon said new plan, and has been prosecuting the same all winter with the utmost vigor possible.

That the whole distance said dike has to be constructed is about one mile, and that three-fourths of the crib-work of same is now built and ready for filling, and if the weather continues favorable it is believed the whole of said crib-work will be completed and filled on or about said 15th of March, 1872, and all possibility of flow of water from the Saint Louis River through said canal effectually cut off.

That all possible available force is at work upon said dike, and said city is prosecuting said work in the utmost good faith, and at great expense; but it is possible that the same may not be fully completed by the 15th of March, and as the spring freshets or breaking up of ice in said bay does not occur until some time in April, and navigation does not commence until after the 1st of May, your memorialists respectfully request and urge that said city of Du Luth have until the 10th or 15th of April to complete said dike or breakwater.

Your memorialists further respectfully represent that Rice's Point and Minnesota Point, and that portion of the Bay of Superior where said dike is being constructed, are wholly within the State of Minnesota, and that the construction of such dike and canal is being done by said city of Du Luth under and by authority from the State of Minnesota.

Your memorialists further represent that his excellency the governor of the State of Minnesota has transmitted a special message to the legislature upon the subject here referred to, a copy of which is herewith annexed and transmitted as a part of this memorial, and as embodying the views of your memorialists.

Your memorialists would further respectfully represent and state, as a fact about which there can be no dispute, that since the opening of said canal through Minnesota Point the water from Lake Superior has flown through said canal into the Bay of Superior fully three-fourths of the time, with a strong current, and that said canal has actually demonstrated that instead of the waters of the Saint Louis River flowing through said canal into the lake, the waters of the lake flow into the bay, as aforesaid, and find their outlet again into the lake with the waters of the Saint Louis River, through the outlet at Superior City.

That the water of the Saint Louis River is entirely different, and easily

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distinguishable from the waters of the lake, and that prior to the opening of said canal the water in the Bay of Superior was the Saint Louis River water, and that since the opening of said canal the water in the Minnesota end of Superior Bay, for a distance of several miles, has become changed to the clear blue lake water, showing conclusively that more water flows through said canal into the bay than flows out into the lake, and thus refuting the entire theory upon which the proceedings against the city were based. This is easily accounted for when it is known that there is a natural and littoral current independent of winds along the north shore of Lake Superior, towards the head of the lake, which, first striking the base of Minnesota Point near where said canal is constructed, causes the water to rush through the canal into the bay and down the bay to the outlet at Superior City, thus increasing instead of diminishing the flow of water at said outlet.

Your memorialists further represent that the Lake Superior and Mississippi Railroad was, by its charter, required to build the road to Du Luth, and has done so.

That the Northern and Pacific Railroad has also fixed its lake terminus at Du Luth, and is now engaged in the construction of docks, at vast expense, in the inner Bay of Superior, and to the access to which the said canal is indispensable.

That without harbor facilities at Du Luth said railroads can form no business connections with steamers and sailing-vessels upon the lakes.

That several hundred thousand dollars have been already expended in the construction of docks, grain-elevators, and harbor facilities for the transaction of business at Du Luth, and a vast commerce already exists at that point, and is rapidly increasing through railroad connections now being made.

Your memorialists therefore again, in conclusion, respectfully but earnestly urge that no hasty or *ex-parte* action be taken to thwart the construction of said canal or dike, and that if the construction of said dike is insisted upon, that a reasonable time be given for that purpose, as it can and will be completed before any of the alleged or pretended injurious consequences can possibly result therefrom.

And your memorialists will ever pray.

Approved March 4, 1872.

STATE OF MINNESOTA,
Office of the Secretary of State.

I certify that the foregoing has been compared with the original on file in this office, and is found to be a true copy of the same.

Witness my hand and the great seal of the State this 7th day of March, A. D. 1872.

[SEAL.]

S. P. JENNISON,
Secretary of State.

[Telegram.]

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 15, 1872.

Major D. C. HOUSTON,
Corps of Engineers, 925 Wabash avenue, Chicago, Illinois:

It is formally reported to the Secretary of War by the mayor of Du Luth that the dike is completed in every respect. You must inspect it in person and report its condition.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 25, 1872.

MAJOR: Will you please inform this office whether any freshet has occurred in the Saint Louis River since the Du Luth canal across Minnesota Point was so far opened as to admit of the flow of any water through it; and, if no freshet has occurred since then, whether any material rise of that river has occurred since that time, and what has been its greatest volume of discharge since the opening of the canal, as compared with its volume of discharge in freshet or flood?

By command of Brigadier General Humphreys.

Very respectfully, your obedient servant,

JOHN G. PARKE,
Major of Engineers.

Major D. C. HOUSTON,
Corps of Engineers, Chicago, Illinois.

UNITED STATES ENGINEER OFFICE,
Chicago, March 25, 1872.

GENERAL: I have the honor to report that I made an inspection of the dike at Du Luth on the 21st instant, with the following results:

The dike extends from near the southern extremity of Rice's Point to Minnesota Point, and is 4,490 feet in length. It is constructed of crib-work, weighted down by stone ballast and filled with sand. The width of the dike is 10 feet. With the exception of about 800 feet at the eastern end, it is constructed of sawed timber, mostly 6 by 8 inches and 4 by 8 inches, so that the side-walls are 8 inches thick, and are connected throughout by ties of the same material and secured by wrought-iron spikes.

For 800 feet near Minnesota Point the work is constructed of round logs secured by iron bolts. The side-walls are lined on the inside with inch boards, closely jointed to hold the filling. The dike is not built in separate cribs, but is continuous throughout, the timbers of the side-walls breaking joints, with the exception of a section of 100 feet at the end of the log crib-work.

This portion is a single crib, and fits close to the rest of the work. In case it should ever be necessary to make an opening in the dike, this section can be removed without disturbing the rest of the work. The filling of sand was obtained from Rice's Point and conveyed by railroad-cars, a track having been laid over the whole length of the dike for the purpose.

The work has, therefore, been well settled by the continual passage over it of a locomotive and train.

Owing to the uneven character of the bottom and the presence of soft material, the work has settled unevenly, so that at some points it is only 6 or 8 inches above the water-level, and at others 2 or 3 feet. A force is engaged leveling up the low places.

The filling is generally up to the top of the work, except at two or three points where it seems to have settled. The work, as far as I could judge, is substantially built for the locality, which is not exposed, and is at present an effectual barrier to any current. It cannot, however, be pronounced complete according to the requirements of the Government, as the water is now at its lowest stage.

The bay and river are entirely frozen over, as is also Lake Superior, for several miles east of Du Luth, and it is not probable that the ice will

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break up for some weeks. The weather is exceedingly cold. Last season both the bay and lake were open at this date.

As an exception to the above statement, the canal through Minnesota Point is not frozen over, and has not been during the winter for any length of time. The current has continued to ebb and flow in the same manner as observed last season. It is possible that after the ice goes out portions of the dike may settle and the filling work down, but this can easily be remedied by building up to the proper height and continuing the filling as long as any settlement takes place.

I would respectfully recommend that the dike be raised until it shall be in no place less than 3 feet above the present water-level; that the filling be continued as long as any settlement is observed; and that the ends of the dike be connected by earthen embankments with the high ground at each end, the top of the embankment to be 10 feet wide, and of the same height above water as the dike.

In conclusion, I would say that all possible requirements have been fulfilled thus far, and the work accomplished has been a marvel of industry and enterprise, affording the most complete evidence of the good faith of the city of Du Luth in this work.

The work cannot be pronounced as complete until after the ice has disappeared and the effect of the spring freshets observed.

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. A., Washington, D. C.

UNITED STATES ENGINEER OFFICE,
Chicago, March 27, 1872.

GENERAL: I have the honor to acknowledge the receipt of your letter of the 25th instant, making inquiries as to freshets in the Saint Louis River, &c.

There has been no freshets in the Saint Louis River, so far as our observations have extended, since the opening of the Du Luth Canal across Minnesota Point, but I am credibly informed that at the time the canal was first opened the water-surface in the Bay of Superior at that point was 8 inches higher than in the lake.

The canal was first opened by cutting a ditch across the point, and a rapid current was produced, cutting a channel about 50 feet wide and 6 or 7 feet in depth. A series of observations on the currents at the canal was commenced in June last, and kept up during the season. No material rise of the Saint Louis River was observed.

The observations which were taken at the point where the river empties into the Bay of Superior, showed that the variations in level and currents were due to the oscillations of the lake.

As no observations have been made of the Saint Louis River in time of freshets, I am now unable to state the amount of discharge at such times, but arrangements have been made to take such observations this season as soon as the ice breaks up. The river, bay, and lake are now frozen over, and may remain so for some weeks.

All observations on the currents at the canal entry, (and mouth of Saint Louis River,) from June last up to the present time, show a continual ebb and flow of the current. I have had a survey made of the

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entry through the ice, and will forward it as soon as I can get the *data* to compare the water-level accurately with that of previous surveys.

A survey was made from the ice in March, 1870. The least depth of water in the channel over the present bar was then 8 feet, and by the present survey 7 feet 6 inches, a difference of only four-tenths of a foot, which is, I think, less than the difference of the lake level, as the water is now at a very low stage.

I have applied to General Comstock for a copy of the lake survey records, so as to make a comparison.

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers, United States Army.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 6, 1872.

SIR: I beg leave to return the letter of W. B. Gaw, esq., of March 9, reporting at the request of the authorities of Du Luth, Minnesota, the condition of the dike built by them across the head of Superior Bay, and to submit, in connection therewith, a copy of a report on the same subject, dated March 25, made, under instructions from this office, by Major D. C. Houston, Corps of Engineers, the officer in charge of harbor improvements on Lake Superior. It will be seen that Major Houston is of the opinion that the "dike cannot be pronounced as complete until after the ice has disappeared and the effect of the spring freshets observed." He recommends "that the dike be raised until it shall be in no place less than 3 feet above the present water-level, that the filling be continued as long as any settlement is observed, and that the ends of the dike be connected by earthen embankments with the high ground at each end, the top of the embankment to be 10 feet wide and of the same height above water as the dike." His views are concurred in by me. I would suggest that a copy of this letter and of Colonel Houston's report be sent to the mayor of Du Luth for his information and guidance.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

[Memorial to Congress, No. 28, Assembly.]

MEMORIAL TO CONGRESS IN REGARD TO THE HARBOR OF SUPERIOR.

To the honorable the Senate and the House of Representatives of the United States of America in Congress assembled:

The memorial of the legislature of the State of Wisconsin respectfully represents:

That the bay and harbor of Superior is a widening of the Saint Louis River, navigable and situated on the boundaries between Minnesota and Wisconsin; that no material change had taken place in the harbor

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since 1823, in which year a chart of it was prepared by Captain Bayfield, of the British army.

That up to 1868 there was at all times not less than 9 feet of water on the bar; that the entry of the Bay of Superior, at the mouth of the Saint Louis River, is the natural channel of communication between Lake Superior and said bay, the latter being an immense natural harbor, having a frontage of many miles in each of the States of Wisconsin and Minnesota, and perfectly available, by way of said entry, for the commerce of Du Luth, in Minnesota, and of Superior, in Wisconsin.

That the United States Government works, now in progress, were commenced in 1868, for the improvement of said entry, and will, when completed, insure a channel between said harbor and the lake easy of access, safe, and of adequate depth for the passage of the largest vessels navigating the lakes, unless the proper effect of such work shall be defeated by the present diversion of the waters of the Saint Louis River from their natural channel at such entry, to another, by an artificial outlet.

That the theory and plan of said Government works are based upon the combined and undiminished flow of the Saint Louis and Nemadji Rivers through said entry, whereby the formation of a bar (which results from the wash of the lake, and not from the sediment of the stream) will be prevented.

The United States Government engineers officially familiar with the situation have explicitly declared that disastrous consequences would result from the opening of an artificial channel through Minnesota Point of sufficient depth for the passage of lake crafts, as projected by the city of Du Luth.

That in April, 1871, the city authorities of Du Luth, Minnesota, engaged in cutting a canal of extraordinary width and depth through Minnesota Point, nearly seven miles from the Government piers, at the entry, in order to connect the upper end of the Bay of Superior with the lake.

That such canal has since been partially completed, and has already drawn down the head of water in the bay, and is destroying the utility of the Government works at the entry.

That the Government engineers in charge of the works at the entry of their harbor protested against the cutting of said canal.

That work on said canal was prosecuted with full notice on the part of the city of Du Luth that, in the opinion of the United States engineers, the opening of such a canal would injuriously affect the natural entry, and defeat the objects of the Government improvement at that point.

That the interests of the citizens of Wisconsin are prejudiced and their vested rights infringed by any cause which permanently renders more difficult the navigation of the "entry," the natural channel of communication between the bay and the lake. And the declarations of the Government engineers have been abundantly justified by the effects which have followed in the actual opening of a canal at Du Luth through Minnesota Point, during the last summer. Almost immediately a remarkable shoaling took place at the natural entry, preceded by no causes that would account for it, except the opening of said canal; and further, the actual filling up of the natural entry between the piers, now in course of construction by the General Government, has utterly precluded ingress or egress of craft owned and now lying in the harbor of Superior.

That within the present year a suit was commenced by the United

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States, in the circuit court of the United States, against the city of Du Luth and others, to restrain the construction of said canal, on the ground that the same, as declared by the War Department, was injurious to interests at the entry which Government was bound to respect.

That the interest of Wisconsin and the people of Superior in said suit was recognized by the Government by engaging Hon. Matthew H. Carpenter, the advocate of that interest, to appear in said suit as counsel for the United States, and on the retainer of the State of Wisconsin.

That upon a motion made in said suit before Judge Miller, at Topeka, the defendant, the city of Du Luth, appearing and strenuously opposing, upon the merits of the case as exhibited by affidavits read on both sides, a provisional injunction was granted, restraining the defendants from further prosecuting the work on said canal, thus justifying the Government's action in the matter, and sustaining its claim that the injury resulting to the entry from the canal was constant and imminent, and such as to demand the immediate discontinuance of the work upon the latter.

That thereupon the attorney for the city of Du Luth repaired immediately to Washington, and there, in company with Mr. Jay Cooke, made application to some Bureau of the War Department to have said injunction suspended, upon the execution by the city of Du Luth of a bond to the United States in the penal sum of $100,000, conditioned that said city should on or before the 1st of December, 1871, build a dike across the bay of Superior, from Rice's Point to Minnesota Point, and should also complete the said canal.

That said application was entertained without any notice of the same having been given to any person in Wisconsin, whose rights and interests were most gravely involved in the proposed action of the Department, and, so far as we are informed, without any notice to any attorney or counsel concerned for those rights and interests.

That said application was at once granted, and an order from the Department issued, directing that said injunction be suspended, upon the execution by the city of Du Luth of the bond aforesaid.

That this action of the War Department (and we so declare with entire respect for its high functions and authority) has ever been regarded, by the people of Wisconsin familiar with the case, as an oppressive and unwarrantable grievance, which officers of the Government would not wantonly inflict, and which could only come from a misapprehension of the situation as regards the various interests concerned for the integrity of the harbor system at the head of Lake Superior.

That the construction of such dike across the Bay of Superior is an outrage, equally as indefensible, equally as violative of private rights, and subversive of public interests, as the canal itself; and yet, under color of the supposed authority of said arrangement with said Jay Cooke and the city attorney of Du Luth, the city of Du Luth has been and still is engaged in an attempt to construct, professedly pursuant to said bond, an obstruction to navigation, called a dike, across the Bay of Superior, on a line distant nearly two miles below the said canal, where the same, if completed so as to answer the requirements of the bond, will permanently obstruct an already important and rapidly increasing commerce on the Bay of Superior, between Superior and Du Luth, and will operate as a barrier to the convenient access of the people of Superior to the Northern Pacific, and Lake Superior and Mississippi Railroads at Du Luth—railroads that would not have been in existence to-day, but for the munificent land-grants given by the whole people to aid

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in their construction, and which, therefore, we cannot recognize the right of any one, practically, to shut out from any portion of the people.

That steamers and vessels owned at Superior, that have for years been employed in trade to and from this port, can now neither enter nor depart from the harbor, while boats owned at other ports, which have for years sailed to and from Superior, are now wholly excluded from the harbor by reason of cutting this canal.

That these acts complained of, so far as they have received any assent or countenance from any officer of the War Department charged with the management of harbor interests at the head of Lake Superior, involve a direct departure from the plans and methods officially recommended by the officers of that Department. (See letter of the Secretary of War, communicating, in compliance with a resolution of the Senate of January 28, 1870, the report of the Chief of Engineers upon the survey of the harbor of Du Luth, at the head of Lake Superior.)

That the reported recent introduction of a bill in the United States Senate, enlarging the powers and authority of the Secretary of War over harbors and rivers, proposes to delegate unusual authority over these important interests that should be retained exclusively by Congress.

That if it become a law, the material interests of Wisconsin are liable to be permanently injured by *ex-parte* statements, as has been already done by misrepresentations made to the honorable Secretary of War.

That the people of Wisconsin are willing to trust and to respect the legitimate and impartial agencies of the General Government, but are not willing that their rights and interests shall be summarily disposed of and set aside upon the suggestion or persuasion of any individual not having lawful jurisdiction over them, however exalted as to wealth or station he may be.

That the above-mentioned encroachments upon the harbor of Superior have been persisted in against law and the constant protest of the people of Wisconsin most seriously affected thereby, and amount clearly to acts of war, which, if committed by a foreign power, this State could not submit to without degradation and disgraceful betrayal of its subjects.

That if, consistently with the relations which bind the States under the Constitution of the United States, we are denied that mode of redress which such hostile acts invite as between independent States, it must be because in the powers and obligations of the General Government some compensatory provision resides, which should be called into exercise in an exigency like the present.

Your memorialists, therefore, respectfully and urgently ask that Congress will, by proper enactments, immediately provide for the filling up of the artificial canal at Du Luth, and for removing the dike (or so much of the same as has been constructed) in the Bay of Superior, and for the prevention, under adequate penalties, of any future outrages of like character.

DANIEL HALL,
Speaker of the Assembly.
CHAS. G. WILLIAMS,
President of the Senate pro tem.

Approved March 7, 1872.

C. C. WASHBURN,
Governor.

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UNITED STATES ENGINEER OFFICE,
Chicago, March 29, 1872.

GENERAL: I have the honor to submit the following report upon the memorial of the State of Wisconsin to Congress, dated March 2, 1872, referred to me for that purpose. For a full understanding of the subject, I will refer briefly to the history of the harbor improvements at the head of Lake Superior.

In 1866 an examination was made by Lieutenant Colonel W. F. Raynolds, Corps of Engineers, who recommended the improvement of the natural outlet of the Bay of Superior by the construction of two piers, the south pier to be 2,000 and the north pier 3,000 feet in length. This great length of pier was necessary to cross the flats at the entry, in order to reach a depth of twelve feet of water in Lake Superior. On August 31, 1871, Mr. Henry Bacon, assistant engineer, employed by Major J. B. Wheeler, made a report in which he recommended a cut through Minnesota Point, about 1½ miles above the entry. This recommendation was made mainly on grounds of economy, "as at the proposed point the land is narrow and low, being about 200 feet from the lake to the bay shore, and 18 feet of water within 600 feet of lake shore, and 11 feet within the same distance from the shore of the bay."

Mr. Bacon says in this report: "A good harbor can be made by improving the present entrance, but a better one can be secured by the cut at a less original cost and less for future maintenance; but it is possible that private interest might be so affected or invaded as to make it most expedient to maintain the natural channel. I do not fully understand the law and equity of this subject. It has been intimated that the owners of property on the bay near the Nemadji River claim to foresee damage to their property by changing the natural outlet of the Saint Louis River; but, if the public advantages are very great and obvious, it seems as though such private claims could hardly be maintained either in law or equity."

At this time there does not seem to have been any demand for a harbor on the part of Du Luth, there being no place of that name in existence, and the great importance of a convenient harbor for that point, since become necessary by its being the terminus of a great railroad, was not considered in the official reports. It was ultimately decided to improve the natural entry, and work was commenced in July, 1868. Had the present condition of affairs at the head of Lake Superior been foreseen, the plan of a new cut through Minnesota Point might have been adopted, and a point selected by which the commerce of both Superior City and Du Luth might have been equally accommodated. In 1869 a survey was made by Capt. James W. Cuyler, Corps of Engineers, of the harbor of Du Luth, with a view to its improvement. He proposed three plans:

1st. By constructing a breakwater in the lake 1,200 feet east of Minnesota Point, and extending out into the lake parallel to the general direction of Minnesota Point.

2d. By cutting a canal through Minnesota Point, nearly opposite Rice's point, building parallel piers into the lake, and dredging for an interior harbor.

3d. By using the present entrance to the Bay of Superior, and dredge out a basin for an interior harbor, as proposed in foregoing plan.

The estimated cost of plan No. 1	$387,253
The estimated cost of plan No. 2	270,014
The estimated cost of plan No. 3	132,241

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Major Wheeler, engineer in charge, reported on these plans as follows: "I would recommend the first plan if commerce required it. The second plan would result in serious injury to the entrance at present being improved. The third plan, if carried out, would amply accommodate all the commerce of Du Luth for some time to come. This plan is dependent upon the further improvements of the entrance to Superior Bay, and would not be necessary until they were completed. These improvements are in progress, and their influence upon the harbor have as yet hardly been felt. As soon as the piers are extended a little farther out into the lake, manifest signs of improvement will be made, and many objections now offered to this plan will pass away."

Captain Cuyler reports as follows regarding the second and third plans: "This second plan commends itself highly to me, provided two assumptions be sustained. First. That the business of Du Luth—what is and shortly will be—justifies the attendant cost. Secondly. That the United States improvement to the present 'entry' will not be prosecuted with sufficient rapidity to meet the rapidly growing commercial wants of Du Luth. Undoubtedly, if the town of Du Luth attracts to itself the business that it assumes to, and now promises to, the "entry" does not afford the facilities required; much remains to be done to it to cause it to fulfill these requirements, and that, too, speedily. The Bay of Superior itself demands a considerable outlay of money, its channel, though deep, being tortuous, and at points narrow, requiring much dredging to widen and straighten it for effective use.

A review of the facts and conditions as they stand at the present scarcely maintains the two above referred to assumptions, on which rests the superiority of the second plan over the others. The cost of this plan at first is large; the same ultimate object is after all but gained as in the third plan, viz, an interior harbor.

Had the United States expended no money on the present improvements at the entry, then the question would have assumed a different phase, and an important element of consideration had been eliminated from it. As it is, the United States have already expended a large amount of money at this entry, and made a commencement toward deriving success from this outlay. I am led, therefore, at the present, to prefer the third plan, pushing forward rapidly, in connection with it, the present entry improvement, and the improvement to the channel of the Bay of Superior, up as far as Conner's Point.

Carrying outward at once this "entry" improvement to where it must eventually be carried, even at large cost, to make it in anywise effective as an entry, and so to satisfy the pressing demands of this situation on the lake for a safe, always accessible harbor of refuge, apart from all considerations of prospective commerce or business, I judge that a commodious interior harbor can thus be made for Du Luth, adequate for its business wants for many years to come.

The question of the relative cost of the second and third plans, in this connection, need scarcely be considered. Adding to the third plan the measures of improvement recommended with it, and on which depends its ultimate effectiveness, the figures of the estimate for it would of course be materially increased, even to a point beyond the cost of the second plan, as estimated for.

A board of engineers concurred in the recommendations of the above-named officers for the third plan. The fact that the Government had already expended a large amount of money for the improvement of the entry, and contemplated a still larger expenditure, doubtless had great weight in bringing about this decision, for there can be no question but

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that the entire commerce of the bay can be accommodated by means of the entry when the works of improvement are finished and the necessary channels excavated in the bay. The works of improvement at the entry were, however, so extensive that, with the means appropriated by Congress, the work did not progress with sufficient rapidity to meet the necessities of Du Luth as the terminus of the Lake Superior and Mississippi and the Northern Pacific Railroads. Dredging might have been resorted to at the entry, but the process is slow and the results uncertain until the piers had been extended to the proper length. The first commerce of importence at Du Luth was carried on from piers in the open lake. A pier was built by the city extending from Minnesota Point, and another by the railroad company on the main shore. The railroad pier was protected by a breakwater built, I think, in the spring of 1870. In March, 1871, an appropriation was made by Congress for the improvement of the harbor of Du Luth, and has been applied to the extension of this breakwater. This breakwater partially protects the docks of the Lake Superior and Mississippi Railroad, but no others. The extension of this breakwater with the open lake so as to afford a secure harbor, will be a work of years, and will be very expensive, owing to the great depth of water and the repairs which will be necessary to maintain it in that locality, where it is exposed to the effects of furious storms and the destructive action of ice.

The necessities of the case required that the inner harbor should be made available, and the quickest way to do this was to cut a canal through Minnesota Point, which plan was carried into effect by the city of Du Luth. The legal proceedings referred to in the memorial, and the construction of a dike across the Bay of Superior, from Rice's Point to Minnesota Point, have been the result. That the effect of opening a canal across Minnesota Point 250 feet wide and 16 feet deep would have the effect of diminishing the scouring effect of the Saint Louis River at the entry has been the opinion of nearly all the engineers who have expressed an opinion on the subject, to my knowledge, and does not need any demonstration, as it is an accepted principle; but I am convinced, from the observations of last season, that this scouring force due to the river has very much less to do with the harbor question than has heretofore been supposed.

The theory of the Government works at the entry is not as stated in the memorial, which says: "That the theory and plan of said Government works, based upon the combined and undiminished flow of the Saint Louis and Nemadji Rivers through said entry, whereby the formation of a bar (which results from the wash of the lake, and not from sediment of the stream) will be prevented."

All that can be reasonably expected of the current of the Saint Louis and Nemadji Rivers is that in time of high water it will wash out the sand between the piers now constructed, and diminish, to a greater or less extent, the amount of dredging required. Except in time of freshets, the current from these rivers has no perceptible influence; as our observations, made from June last up to November, show that the direction of the current at the entry canal, and at the mouth of Saint Louis Bay varied with the rise and fall of the lake. There was a continual ebb and flow at the entry and canal, the current at one time reaching three and one-half miles per hour, running in.

After the channel between the piers is dredged out, either by the action of the current or by machinery, to the proper depth, and the piers are carried out to a depth of 18 or 20 feet in the lake, the effect of the current of the Saint Louis River and Nemadji, in high water, will be

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detrimental to the entry instead of beneficial, as it will have the effect of pushing the material on the bottom out beyond the ends of the piers, where bars will be formed.

In other words, if, after the piers have been extended to deep water and a channel dredged out, the waters of the two rivers could be entirely diverted from the entry, a better harbor would be obtained than would otherwise exist. We would then have an inner basin, connected by a canal with the deep water of the lake. The sides of this canal are protected by piers, which exclude the drift of sand and shingle along the shores and which are carried out into deep water, so as to break the force of the waves and prevent any injurious disturbance of the bottom.

At the time the canal on Minnesota Point was opened, the works at Superior had not progressed to the extent proposed. The piers had not reached the bar which it was proposed to cut across. One of the piers has now extended entirely over the bar and the other is across the shoalest point. It has been the expectation that the current from the rivers this spring would cut out a channel through the bar, perhaps not of sufficient capacity, but materially reducing the expense of dredging. The cutting of a canal which would reduce the effect of the current and entail additional expense upon the Government in the prosecution of a public work was held to be illegal unless measures were taken to counteract its effects. This could only be accomplished by either closing the canal or erecting a barrier which would keep the water of the river in its original channel. This has been done by building a dike from Rice's Point to Minnesota Point, which, in my judgment, will accomplish the object for which it is built.

That this dike will be, in its present condition, a serious inconvenience, to say the least, not only to Superior City but to Du Luth, is very apparent.

The evil is, in my judgment, only temporary. After the spring freshets have passed, an opening can be made in the dike which will accommodate all the requirements of commerce, and I doubt whether it will ever be necessary to close it. The dike will then have accomplished its purpose.

Before another season, if Congress passes the appropriation of $65,000 asked for, the works will have been so far advanced at the entry that I anticipate no further trouble even if the dike should be removed. Up to the present time no perceptible injury to the entry has taken place.

I inclose a tracing of soundings made about the 1st of March of this year, and another made in March, 1870. These soundings were taken through the ice and can be relied on as correct. The line of deepest water between the piers is marked by a blue line.

The statement in the memorial, that a remarkable shoaling took place at the entry almost immediately after the opening of the canal, may be correct, but it is a remarkable fact that a cut of 50 feet in width and 6 or 7 feet deep should have had such a sudden effect upon a channel 400 feet wide.

Lieutenant A. M. Miller, Corps of Engineers, my assistant, made soundings to ascertain whether any shoaling took place at that time, and he was unable to discover it. A survey of the entry was made by Lieutenant Miller in July last, which shows the least depth of water in the channel between the piers 8.2 feet, and the same in November. By reducing the present soundings to the same reference we find that the lake is 0.8 feet lower than in November.

It is important in considering the subject of this harbor to know that

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the old tortuous channel, which was formerly used, is now closed by the Minnesota pier, which crossed a bar composed of hard sand, and it is intended to make a straight channel through this bar. During the progress of the work, changes in the bottom between the piers have constantly occurred. The piers have changed the direction of the currents, which have affected the bottom. It will be observed that the water is 37 feet in depth at the deepest point between the piers. Last July it was only 33.7 feet. Since that time the current has continued to ebb and flow, changing its direction frequently and suddenly during the day. In 1870 the depth at the same point was 27 feet, and in 1861 the depth, in the same vicinity, only 19 feet. From the observations made from June last up to the present time, on the canal, entry, Saint Louis and Nemadji Rivers, I conclude that the canal has had no detrimental influence upon the entry; that it can have no injurious effect except in time of freshets; that this injurious effect will not last after the works of improvement at the entry are completed and a channel excavated either by the scour of the current or by dredging; that all possible diminution of scour will be prevented by the dike now built, if finished according to my recommendations, and that after the completion of the improvement at the entry, probably this season and certainly next, there will be no further necessity for the dike for the purpose for which it was built. Further, that after the spring freshets this year an opening may be made in the dike without prejudice to the harbor of Superior. It is proposed this spring to dredge a channel at the entry if the current does not have that effect.

The following is an extract from my report to the Chief of Engineers, dated November 22, 1871:

"So far as these observations bear on the question of the Du Luth Canal, its effect upon the entry, and the necessity of a dike to prevent the waters of the Saint Louis River from passing through the canal, and thus diminishing the scouring effect necessary to maintain the proper depth of water at the entry, they seem to show that, except in times of high water in the Saint Louis River sufficient to overcome the lake influence, the canal would have no effect whatever on the entry, as the current through it and the entry is dependent entirely upon the rise and fall of the lake; the amount of water which is discharged from the Saint Louis River during the low-water season being insignificant compared with the ebb and flow of the lake. In time of freshets the cause is different. I have no record of the amount of water discharged by the Saint Louis River at such times, but the lake-survey chart shows deep water at the mouth of the river, and a deep, narrow channel in the bay from the mouth to the natural entry, which I conceive to have been caused by the scour of the current from the river. Now, if a canal had been opened on the site of the present canal through Minnesota Point, before the works of improvement had been commenced at the entry, or while those works were in the condition they were when the canal was commenced, of the width proposed, viz, 250 feet, I have no doubt that the result would have been detrimental to the entry, which depended for its depth upon the unusual scour from the river. That this scouring effect would have been diminished by making a new outlet into the lake 250 feet in width, and three miles nearer the mouth of the Saint Louis River than the entry, requires no demonstration; for it is proved by experience in similar instances on Lake Michigan.

"But a different state of things now exists; the piers at the entry have been extended out nearly to the deep water of the lake, and vessels

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drawing 8 feet 6 inches can now enter the harbor. No dredging has yet been done, though it was originally estimated that dredging would be necessary."

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers, United States Army.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. Army, Washington, D. C.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

RETURNING

Bill S. 805, entitled "An act granting a pension to Abigail Ryan, widow of Thomas A. Ryan," with his objections.

APRIL 15, 1872.—Read, referred to the Committee on Pensions, and ordered to be printed.

To the Senate of the United States:

I return, without my approval, an act entitled "An act granting a pension to Abigail Ryan, widow of Thomas A. Ryan."

The name of Mrs. Ryan is now borne upon the pension-rolls pursuant to an act of Congress entitled "An act for the relief of Mrs. Abigail Ryan," approved June 15, 1866. (U. S. Statutes, vol. 14, page 590.)

U. S. GRANT.

EXECUTIVE MANSION,
Washington, D. C., April 15, 1872.

FORTY-SECOND CONGRESS OF THE UNITED STATES OF AMERICA—AT THE SECOND SESSION:

Begun and held at the city of Washington, on Monday, the 4th of December, 1871.

AN ACT granting a pension to Abigail Ryan, widow of Thomas A. Ryan.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and directed to place on the pension-rolls, subject to the provisions and limitations of the pension laws, the name of Abigail Ryan, widow of Thomas A. Ryan, and pay her a pension to commence from the passage of this act.

J. G. BLAINE,
Speaker of the House of Representatives.
SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

I certify that this act did originate in the Senate.

GEO. C. GORHAM, *Secretary.*

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 62.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

In obedience to law, lists of the clerks, messengers, and laborers employed in the various bureaus of the War Department during the year 1871.

APRIL 18, 1872.—Ordered to lie on the table and be printed.

WAR DEPARTMENT, *April* 17, 1872.

The Secretary of War has the honor to send to the United States Senate and House of Representatives, as required by the eleventh section of the act of August 26, 1842, lists of the clerks, messengers, and laborers employed in the various bureaus of this Department during the year 1871, showing the rates of their compensation, &c., &c.

WM. W. BELKNAP,
Secretary of War.

List of persons employed in the office of the Secretary of War during the year 1871, *their class, time employed, compensation, and whence appointed.*

Name.	Class.	Time employed. From—	Time employed. To—	Compensation.	Whence appointed.
John Potts	Chief clerk	Jan. 1, 1871	Dec. 31, 1871	$2,500 00	Dist. of Columbia.
James R. Roche	Disbursing clerk	Jan. 1, 1871	Dec. 31, 1871	2,000 00	Missouri.
Henry T. Crosby	Clerk at $2,000	Jan. 1, 1871	Dec. 31, 1871	2,000 00	Pennsylvania.
William T. Barnard	do	Jan. 1, 1871	Dec. 31, 1871	2,000 00	Massachusetts.
John B. Tanner	Clerk of class four	Jan. 1, 1871	Dec. 31, 1871	1,800 00	Delaware.
R. Duryee	do	Jan. 1, 1871	Dec. 31, 1871	1,800 00	Connecticut.
William B. Lee	Clerk of class three	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Massachusetts.
Patrick Barry	do	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Ohio.
W. H. Orcutt	do	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Army.
Samuel Hodgkins	do	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Do.
J. D. Kinsman	do	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Iowa.
A. McIntire	do	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Pennsylvania.
B. Foote	Clerk of class two	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Vermont.
Edwin M. Lawton	do	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Dist. of Columbia.
W. Tolman	do	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Massachusetts.
L. P. King	Clerk of class one	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Dist. of Columbia.
Charles Calvert	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
[illegible] Cunningham	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Kansas.
O. Hagan	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Dist. of Columbia.
James Stone	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Iowa.
Bankes Brookes	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Army.
Joshua T. Smith	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
H. Bellas	do	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
William S. Dupee	Messenger	Jan. 1, 1871	Dec. 31, 1871	840 00	Kentucky.
J. Madison	Assistant messenger	Jan. 1, 1871	Dec. 31, 1871	720 00	Dist. of Columbia.
John Carter	do	July 1, 1871	Dec. 31, 1871	720 00	Army.
Morgan McInerney	do	June 9, 1871	Dec. 31, 1871	720 00	Do.
James H. Stewart	Laborer	Aug. 9, 1871	Dec. 31, 1871	720 00	Maryland.

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ADJUTANT GENERAL'S OFFICE,
Washington, February 24, 1872.

SIR: In compliance with circular from the War Department dated February 17, 1872, I have the honor to transmit herewith a statement showing the names and number of civilian clerks and messengers employed in this office during the year 1871, amount of compensation received by each, &c., for transmission to Congress, as required by the acts approved April 20, 1818, and August 26, 1842.

I am, sir, very respectfully, your obedient servant,

E. D. TOWNSEND,
Adjutant General.

The Honorable the SECRETARY OF WAR.

A statement showing the number of civilian clerks employed in the Adjutant General's Office during the year 1871, amount of compensation received by each, &c., &c., furnished in compliance with acts of Congress of April 20, 1818, and August 26, 1842.

Name.	Class.	Annual salary.	Period of service.		Total amount received.
			From—	To—	
R. P. Thian	Chief Clerk	$2,000 00	June 30, 1871	Dec. 31, 1871	$1,000 00
R. P. Thian	Four	1,800 00	Jan. 1, 1871	June 30, 1871	900 00
John C. Hesse	do	1,800 00	Jan. 1, 1871	Dec. 31, 1871	1,800 00
Max Bock	do	1,800 00	Jan. 1, 1871	Dec. 31, 1871	1,800 00
Henry Douglass	Three	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
Charles F. Howard	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
William Anderson	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
John D. Sabine	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
Robert Shields	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
D. E. Holmes	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
Benjamin Engel	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
Joseph S. McCoy	do	1,600 00	Jan. 1, 1871	Dec. 31, 1871	1,600 00
Charles Brown	do	1,600 00	June 1, 1871	Dec. 31, 1871	931 87
H. T. Grugan	do	1,600 00	Jan. 1, 1871	June 1, 1871	668 13
James McNamara	Two	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Samuel P. Pearson	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
John W. Palmer	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Samuel R. Davis	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
George Henry	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
C. H. Miller	do	1,400 00	Jan. 1, 1871	June 16, 1871	646 16
William Kelley	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Dennis Maher	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
F. H. Smith	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
George W. Rich	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
J. W. Kirkley	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
R. J. Blakelock	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
John Leary	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
N. W. King	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Charles W. Shelton	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
G. A. Brandt	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
C. E. Davenport	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
John Riordan	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
John R. Dickson	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
W. N. Peck	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
George W. Salter	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
O. W. Longan	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
J. H. Jochum	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
John McCarthy	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Henry Ellerbrook	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
H. S. Brinkerhoff	do	1,400 00	Feb. 17, 1871	Dec. 31, 1871	1,217 83
Charles F. Keefer	do	1,400 00	June 1, 1871	Dec. 31, 1871	815 38
Francis B. Heitman	do	1,400 00	July 1, 1871	Dec. 31, 1871	700 00
George Allen, jr	do	1,400 00	Jan. 1, 1871	Feb. 16, 1871	182 78
Charles Brown	do	1,400 00	Jan. 1, 1871	June 1, 1871	584 62
Richard O. Dowd	One	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Levi Davis	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
James O. Lee	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
E. L. Rogers	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
C. H. Carrington	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Frank McGlathery	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
James P. Towsend	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Jesse W. Lee jr	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
M. B. Geer	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
F. H. Stafford	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Thomas B. Nolan	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Alfred Hartenstein	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
James W. Webb	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
J. C. Hatie	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00

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Number of civilian clerks employed in the Adjutant General's Office, &c.—Continued.

Name.	Class.	Annual salary.	Period of service. From—	Period of service. To—	Total amount received.
George Harwood	One	$1,200 00	Jan. 1, 1871	Dec. 31, 1871	$1,200 00
Henry C. Thomas	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
George W. Haulenbeek	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Charles A. Bretow	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
George W. Babcock	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
George W. Nagle	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Clifton Lowe	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
J. C. Allen	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Frank Brintnall	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
John Bussius	do	1,200 00	June 1, 1871	Dec. 31, 1871	700 00
Francis Dalton	do	1,200 00	July 1, 1871	Dec. 31, 1871	600 00
Edwin J. Sweet	do	1,200 00	Oct, 1, 1871	Dec. 31, 1871	300 00
S. E. Carrington	do	1,200 00	Jan. 1, 1871	Oct. 1, 1871	900 00
George W. Pratt	do	1,200 00	Jan. 1, 1871	June 1, 1871	500 00
Francis B. Heitman	do	1,200 00	Jan. 1, 1871	July 1, 1871	600 00
Jacob B. Baker	Messenger	840 00	Jan. 1, 1871	Dec. 31, 1871	840 00
Adam Dade	do	840 00	Jan. 1, 1871	Dec. 31, 1871	840 00
Total					90,526 17
TEMPORARY CLERKS.					
D. B. Searle	Three	1,600 00	Jan. 1, 1871	June 1, 1871	666 65
George E. Lowerec	do	1,600 00	June 1, 1871	Dec. 31, 1871	933 31
George E. Lowerec	Two	1,400 00	Jan. 1, 1871	June 1, 1871	583 30
Charles E. Connor	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Henry S. Merrill	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
Eugene Gaither	do	1,400 00	Jan. 1, 1871	Dec. 31, 1871	1,400 00
George W. Pratt	do	1,400 00	June 1, 1871	Dec. 31, 1871	816 62
E. H. Spang	One	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Charles P. Miller, jr	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
W. H. Conkle	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
A. C. Ronne	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
James B. Carter	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Francis E. Cook	do	1,200 00	Jan. 1, 1871	June 9, 1871	530 00
Jerome Wise	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
T. E. Sewell	do	1,200 00	Jan. 1, 1871	Sept. 10, 1871	833 33
Ed. H. Atkins	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
E. Stanley Schreiner	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
C. C. Ellis	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Edward Grieve	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
D. E. Knapp	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
J. H. Lester	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
H. C. Porter	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
W. H. B. Kittson	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
B. F. Evans	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
G. W. Dwenger	do	1,200 00	Jan. 1, 1871	Dec, 31, 1871	1,200 00
F. J. Gramlich	do	1,200 00	Jan. 1, 1871	Dec. 31, 1871	1,200 00
Frank Eichelberger	do	1,200 00	Sept. 1, 1871	Dec. 31, 1871	400 00
Henry E. Scott	do	1,200 00	Oct. 1, 1871	Dec. 31, 1871	300 00
Total					29,663 21

Total amount expended for civilian employés $120,189 38

Present number of civilian clerks 65
Present number of civilian messengers 2
Present number of civilian temporary clerks 24

Total 91

J. P. MARTIN,
Assistant Adjutant General.

WASHINGTON, D. C., *February* 21, 1872.

This list does not embrace the clerks employed in the volunteer-service branch.

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HEADQUARTERS ARMY OF THE UNITED STATES,
INSPECTOR GENERAL'S OFFICE,
Washington, D. C., February 17, 1872.

SIR: In compliance with the requirements of the act of Congress approved August 26, 1842, I have the honor to submit the following statement of employés in this office:

James Barwood, clerk of class three, from January 1 to December 31, 1871. Compensation, $1,600. Appointed from New York.

The person above named has been usefully employed during the time mentioned, and his services cannot be dispensed with without detriment to the public service; and the better dispatch of business does not require his removal and the appointment of another in his stead.

Very respectfully, your obedient servant,

ED. SCHRIVER,
Inspector General.

The Honorable the SECRETARY OF WAR.

WAR DEPARTMENT, BUREAU OF MILITARY JUSTICE,
Washington, D. C., February 19, 1872.

SIR: In compliance with the requirements of the acts of Congress of April 20, 1818, and August 26, 1842, I have the honor to submit the following statement showing the number, classes, names, and compensation of clerks authorized by law, and who were in the service of this Bureau during the year ending December 31, 1871, and are still so:

Name.	Class.	Compensation.
James M. Wright	Chief clerk	$2,000
O. L. Pruden	Third	1,600
Thomas Duke	First	1,200
Total		4,800

In view of the amount and condition of the public business in charge of this Bureau, it is not believed that the interests of the service will allow of any reduction of its clerical force for the present.

Very respectfully, your obedient servant,

J. HOLT,
Judge Advocate General.

Hon. W. W. BELKNAP,
Secretary of War.

WAR DEPARTMENT, OFFICE OF THE CHIEF SIGNAL OFFICER,
Washington, D. C., April 16, 1872.

SIR: I have the honor to submit herewith duplicate lists of clerks employed in the office of the Chief Signal Officer during the year 1871.

Very respectfully, yours,

GARRICK MALLERY,
Capt. and Bvt. Lieut. Col. U. S. A., Acting Signal Officer and Assistant
In temporary absence of the Chief Signal Officer.

Hon. W. W. BELKNAP,
Secretary of War.

Statement of clerks and other persons employed in the office of the Chief Signal Officer of the Army during the year 1871.

Name.	Grade.	Time employed.	Salary.	Total pay.	Whence appointed.
Alexander Ashley	Class 2	Jan. 1, to Dec. 31	$1,400	$1,400	Pennsylvania.
James B. Wimer	....do	.....do	1,400	1,400	District of Columbia.

GARRICK MALLERY.
Capt. and Bvt. Lieut. Col., U. S. A.,
Acting Signal Officer and Assistant
In temporary absence of Chief Signal Officer.

OFFICE OF THE CHIEF SIGNAL OFFICER,
Washington, D. C., April 16, 1872.

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WAR DEPARTMENT, QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., January 5, 1872.

SIR: In compliance with the acts of Congress approved April 20, 1818, and August 26, 1842, I have the honor to transmit a statement showing the names, compensation, &c., of clerks and others employed in the office of the Quartermaster General during the year ending December 31, 1871.

These persons have been usefully employed; none can be dispensed with without detriment to the public service, nor is the removal of any and the appointment of others in their stead at this time required for the better dispatch of business.

Very respectfully, your obedient servant,

R. W. ALLEN,
Acting Quartermaster General.

The Honorable the SECRETARY OF WAR,
Washington, District of Columbia.

Statement showing the names of clerks and others employed in the office of the Quartermaster General during the year ending December 31, 1871, *the time each has been employed, the amount of compensation received by each, and the place of residence when appointed.*

Name.	Employed.		Compensation.	Whence appointed.
	From—	To—		
George K. Finckel	Jan. 1, 1871	June 30, 1871	$700 00	District of Columbia.
George K. Finckel	July 1, 1871	Dec. 31, 1871	1,000 00	Do.
William A. Gordon	Jan. 1, 1871	Dec. 31, 1871	1,800 00	Pennsylvania.
Ira S. Allen	Jan. 1, 1871	Dec. 31, 1871	1,800 00	Wisconsin.
A. W. Lattimore	Jan, 1, 1871	Dec. 31, 1871	1,800 00	Indiana.
John S. Gallaher	Jan. 1. 1871	Dec. 31, 1871	1,600 00	Virginia.
Thomas C. Magruder	Jan. 1, 1871	Dec. 31, 1871	1,600 00	District of Columbia.
Charles Ebert	Jan. 1, 1871	Dec. 31, 1871	1,600 00	New York.
Albert Gaines	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Maine.
Charles W. Hills	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Ohio.
Washington F. Gapen	Jan. 1, 1871	Dec. 31, 1871	1,600 00	Iowa.
George W. Partridge	Jan. 1, 1871	Dec. 18, 1871	1,543 48	Indiana.
George Marsh, jr	Jan. 1, 1871	Jan. 8, 1871	30 43	Illinois.
George Marsh, jr	Jan. 9, 1871	Dec. 31, 1871	1,565 22	Do.
John M. Grahame	Jan. 1, 1871	Dec. 18, 1871	1,350 54	Kansas.
John M. Grahame	Dec. 19, 1871	Dec. 31, 1871	56 52	Do.
Alfred Cridge	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Illinois.
Noah H. Martin	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Pennsylvania.
James G. Hening	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Maryland.
Henry H. Garrett	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Pennsylvania.
George A. Meyer	Jan. 1, 1871	Dec. 31, 1871	1,400 00	New York.
C. C. Nelson	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Illinois.
M. E. Uvell	Jan. 1, 1871	Dec. 31, 1871	1,400 00	New York.
Fred A. Gee	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Do.
John H. Pickell	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Do.
George E. Davis	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Pennsylvania.
B. J. O'Driscoll	Jan. 1, 1871	Dec. 31, 1871	1,400 00	New York.
Thomas A. Scott	Jan. 1, 1871	Dec. 31, 1871	1,400 00	District of Columbia.
William H. Hodges	Jan. 1, 1871	Dec. 31, 1871	1,400 00	New Jersey.
L. F. Randolph	Jan. 1, 1871	Dec. 31, 1871	1,400 00	New York.
Henry W. Smith	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Do.
E. J. Collins	Jan. 1, 1871	Dec. 31, 1871	1,400 00	Pennsylvania.
John E. Ayers	Jan. 1, 1871	Jan. 8, 1871	26 67	New York.
John E. Ayers	Jan. 9, 1871	Dec. 31, 1871	1,368 88	Do.
Robert J. Woodburn	Jan. 1, 1871	June 30, 1871	600 00	Pennsylvania.
Robert J. Woodburn	July 1, 1871	Dec. 31, 1871	700 00	Do.
Benjamin A. Farless	Jan. 1, 1871	June 30, 1871	900 00	New York.
Benjamin A. Farless	July 1, 1871	Dec. 31, 1871	700 00	Do.
Henry B. Fernald	Dec. 19, 1871	Dec. 18, 1871	1,157 61	Massachusetts.
Henry B. Fernald	Jan. 1, 1871	Dec. 31, 1871	49 46	Do.
William H. Burnett	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Iowa.
John Statz	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
Michael Manning	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
Isaac G. Jaquette	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
Isaiah Thropp, jr	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
S. F. Wainwright	Jan. 1, 1871	Dec. 31, 1871	1,200 00	District of Columbia.
Theodore W. Browne	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
Lewis Galeski	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
Ed. C. Townsend	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
I. N. Thornburg	Jan. 1, 1871	Dec. 31, 1871	1,200 00	West Virginia.
Alpha. N. Brown	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Virginia.
George W. George	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New Hampshire.
Frank B. Holden	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Maine.

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Clerks and others employed in the office of the Quartermaster General, &c.—Continued.

Name.	Employed. From—	Employed. To—	Compensation.	Whence appointed.
Thomas Montgomery	Jan. 1, 1871	Dec. 31, 1871	$1,200 00	New York.
John D. Creighton	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Massachusetts.
Francis McLean	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
D. C. Smith	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Rhode Island.
D. S. Tompkins	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Michigan.
H. H. Parmenter	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Massachusetts.
M. H. Marsland	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
Emil Arctander	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
J. S. Franklin	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
John L. Heupel	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
Robert Armour	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
H. W. Jackson	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
George W. Callahan	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
Thomas M. Newman	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Maryland.
John C. Dougherty	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
George Palazotto	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
John Perkins, jr	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Massachusetts.
James B. McCreary	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
William Ludgate	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
Henry A. White	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
John A. Campbell	Jan. 1, 1871	Dec. 31, 1871	1,200 00	District of Columbia.
James Williamson	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
James McMahon	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
Josiah Slick	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
Lewis F. Fix	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Ohio.
A. Von Dachenhausen	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
Alex. M. Kenaday	Jan. 1, 1871	Dec. 31, 1871	1,200 00	California.
William B. Johnson	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Ohio.
Ebenezer P. Miller	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Virginia.
William Hamlet	Jan. 1, 1871	Dec. 31, 1831	1,200 00	Massachusetts.
Thomas W. Webster	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Maryland.
Samuel M. Thatcher	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Pennsylvania.
Nathaniel McCrea	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Iowa.
F. H. Evans	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New Hampshire.
W. J. Rohrbough	Jan. 1, 1871	Dec. 31, 1871	1,200 00	West Virginia.
Orven McCabe	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Missouri.
William Dolsen	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
D. W. Cleaver	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Iowa.
George F. Robinson	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Maine.
Thomas J. Abbott	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Virginia.
J. C. Goolrick	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
Samuel D. Finckel	Jan. 1, 1871	Dec. 31, 1871	1,200 00	District of Columbia.
George C. Thomas	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Do.
Thomas Sprague	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Indiana.
S. B. Le Compte	Jan. 1, 1871	Dec. 31, 1871	1,200 00	New York.
W. J. O'Brien	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Army.
William Ryan	Jan. 1, 1871	Dec. 31, 1871	1,200 00	Nebraska.
John B. Pearce	Jan. 1, 1871	Dec. 31, 1871	1,190 22	Ohio.
C. E. Hunt	Jan. 1, 1871	May 12, 1871	436 46	New York.
C. W. Sackville	Jan. 1, 1871	June 10, 1871	534 07	Do.
John W. Knott	Jan. 1, 1871	Apr. 15, 1871	349 45	Ohio.
T. F. C. Youngs	Jan. 1, 1871	Nov. 1, 1871	1,004 35	New York.
John M. Dwyer	Jan. 1, 1871	Oct. 31, 1871	996 74	Indiana.
John Ritchie	Jan. 1, 1871	Aug. 6, 1871	717 39	New York.
M. B. Robinett	Jan. 1, 1871	Dec. 31, 1871	981 51	Maryland.
William H. Goodhue	Jan. 1, 1871	June 30, 1871	600 00	Indiana.
John J. Safely	Jan. 1, 1871	Aug. 31, 1871	802 18	Iowa.
Hervy Colburn	Jan. 1, 1871	Jan. 8, 1871	35 56	Maryland.
Hervy Colburn	Jan. 9, 1871	Dec. 31, 1871	1,173 34	Do.
H. H. Wright	Jan. 31, 1871	Dec. 31, 1871	1,100 00	District of Columbia.
C. A. Maxwell	Apr. 17, 1871	Dec. 31, 1871	847 25	Ohio.
Lewis B. Parker	June 1, 1871	Dec. 31, 1871	698 90	South Carolina.
Bernard Garvey	June 11, 1871	Dec. 31, 1871	665 93	New York.
P. H. Flood	July 7, 1871	Dec. 31, 1871	580 43	District of Columbia.
James T. Baden	July 13, 1871	Dec. 31, 1871	560 87	Maryland.
C. W. Taylor	Aug. 11, 1871	Dec. 31, 1871	466 30	New York.
Wiley Britton	Oct. 21, 1871	Dec. 31, 1871	235 87	Kansas.
Otto Richter	Nov. 6, 1871	Dec. 31, 1871	181 52	Missouri.
Emma D. Sedgwick	Nov. 7, 1871	Dec. 31, 1871	178 26	Connecticut.
Louisa A. Byrne	Dec. 19, 1871	Dec. 31, 1871	42 39	District of Columbia.
Daniel A. Whitesell	Jan. 1, 1871	Dec. 21, 1871	1,115 21	Pennsylvania.
Thomas F. Gibbs	Jan. 1, 1871	June 30, 1871	700 00	Massachusetts.
COPYISTS.				
Emma D. Sedgwick	Jan. 1, 1871	Nov. 6, 1871	765 49	Connecticut.
Louisa A. Byrne	Jan. 1, 1871	Dec. 18, 1871	868 20	District of Columbia.
Emma Janney	Jan. 1, 1871	Oct. 31, 1871	750 00	Do.

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Clerks and others employed in the office of the Quartermaster General, &c.—Continued.

Name.	Employed. From—	Employed. To—	Compensation.	Whence appointed.
Priscilla Hebb	Jan. 1, 1871	Dec. 31, 1871	$900 00	District of Columbia.
Julia H. Wilcox	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Marian Goodall	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Emma A. Wood	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Louise K. Camp	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Julia B. Maynadier	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Eliza C. Bull	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Mary B. Hulings	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Anne C. Knight	Jan. 1, 1871	Dec. 31, 1871	900 00	Massachusetts.
Garaphelia B. Howard	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Eliza W. Barstow	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Sarah N. Bates	Jan. 1, 1871	Dec. 31, 1871	900 00	Kansas.
Maria C. Page	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Edmonia S. Crawford	Jan. 1, 1871	Dec. 31, 1871	900 00	Virginia.
Sarah E. Rawlins	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Julia C. Webb	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Caroline A. Sherman	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
E. T. Cowperthwaite	Jan. 1, 1871	Dec. 31, 1871	900 00	Pennsylvania.
Jane M. McCrabb	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Hannah A. Inslee	Jan. 1, 1871	Dec. 31, 1871	900 00	New York.
Helen J. Paulding	Jan. 1, 1871	Dec. 31, 1871	900 00	Do.
Lizzie A. Richardson	Jan. 1, 1871	Dec. 31, 1871	900 00	New Hampshire.
Margaret W. Sill	Jan. 1, 1871	Dec. 31, 1871	900 00	New Jersey.
Marcia Richardson	Jan. 1, 1871	Dec. 31, 1871	900 00	Michigan.
Lizzie P. Knowlton	Jan. 1, 1871	Dec. 31, 1871	900 00	Illinois.
Ida Allen	Jan. 9, 1871	Dec. 31, 1871	880 00	District of Columbia.
Emily Ring	Jan. 17, 1871	Dec. 31, 1871	860 00	New York.
Margaret H. Fillebrown	Nov. 3, 1871	Dec. 31, 1871	145 00	District of Columbia.
Mary L. Davidson	Nov. 16, 1871	Dec. 31, 1871	112 50	Maryland.
MESSENGERS.				
George Phelps	Jan. 1, 1871	Dec. 31, 1871	840 00	District of Columbia.
ASSISTANT MESSENGERS.				
Thomas Allen	Jan. 1, 1871	Dec. 31, 1871	720 00	District of Columbia.
Henry Payne	Jan. 1, 1871	Dec. 31, 1871	720 00	Do.
LABORERS.				
Charles Wilton	Jan. 1, 1871	Dec. 31, 1871	720 00	District of Columbia.
Alex. Campbell	Jan. 1, 1871	Dec. 31, 1871	720 00	Do.
Patrick Allen	Jan. 1, 1871	Dec. 31, 1871	720 00	Do.
Patrick Wall	Jan. 1, 1871	Dec. 31, 1871	720 00	Do.
Thomas G. Streett	Jan. 1, 1871	Dec. 31, 1871	720 00	Maryland.
Thomas Connolly	Jan. 1, 1871	Feb. 28, 1871	118 00	District of Columbia.
Daniel Killigan	Mar. 7, 1871	Dec. 31, 1871	590 00	Do.
SUPERINTENDENT.				
George K. Finckel	Jan. 1, 1871	Dec. 31, 1871	200 00	District of Columbia.

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OFFICE COMMISSARY GENERAL OF SUBSISTENCE,
Washington City, February 17, 1872.

SIR: In compliance with the instructions of your circular letter of this date, I have the honor to transmit herewith a list of the clerks, messengers, and laborers employed in this Bureau during the year 1871, with the amount received by each, and their annual compensation.

I have the honor to be, very respectfully, your obedient servant,

A. B. EATON,
Commissary General of Subsistence.

The Honorable the SECRETARY OF WAR.

Statement showing the names, compensation, &c., of clerks, messenger, and laborers employed in the office of the Commissary General of Subsistence, from January 1, 1871, to December 31, 1871.

Number.	Name.	Annual salary.	Period of service.		Amount received.	Remarks.
			From—	To—		
1	Richard M. Hanson	$1,800 and 2,000	Jan. 1, 1871	Dec. 31, 1871	$1,900 00	Appointed chief clerk, with salary of $2,000, on July 1, 1871.
2	Joseph Schwartz	1,600	Jan. 1, 1871	Dec. 31, 1871	1,600 00	
3	John Penn Jones	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
4	D. Austin McCarthy	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
5	William W. McGill	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
6	William H. Wetzel	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
7	William Nourse	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
8	H. F. Robinson	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
9	G. J. L. Foxwell	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
10	Charles T. Eldridge	1,400	Jan. 1, 1871	Dec. 31, 1871	1,400 00	
11	John M. Belt	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
12	William H. Reynolds	1,200	Jan. 1, 1871	Oct. 2, 1871	906 52	Resigned.
13	Frederick Johnston	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
14	R. H. Barr, jr	1,200	Jan. 1, 1871	April 3, 1871	311 54	Died.
15	Charles E. Hunt	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
16	James R. Birckhead	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
17	Amos Hadley	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
18	Charles N. Moore	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
19	R. S. Kearney	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
20	David Allen	1,200	Jan. 1, 1871	Nov. 30, 1871	1,098 91	Resigned.
21	F. W. Edwards	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
22	William H. Partridge	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
23	William F. Johnson	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
24	Walter Benner	1,200	Jan. 1, 1871	Feb. 15, 1871	153 33	Resigned.
25	John O'Dwyer	1,200	Jan. 1, 1871	Dec. 31, 1871	1,200 00	
26	Alpheus W. Clear	1,200 and 720	Jan. 1, 1871	Dec. 31, 1871	1,118 00	Appointed clerk of class one, March 1, 1871, from laborer, at $720 per annum.
27	John Barr	1,200	April 11, 1871	Dec. 31, 1871	867 03	
28	Milan C. Edson	1,200	Oct. 24, 1871	Dec. 31, 1871	225 00	
29	Elasah Moran	1,200	Dec. 5, 1871	Dec. 31, 1871	88 04	
30	George Lackey	840	Jan. 1, 1871	Dec. 31, 1871	840 00	
31	John Craige	720	Jan. 1, 1871	Dec. 31, 1871	720 00	
32	James Bremner	720	Mar. 8, 1871	Dec. 31, 1871	588 00	

A. B. EATON,
Commissary General of Subsistence.

OFFICE COMMISSARY GENERAL SUBSISTENCE, *February 17, 1872.*

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SURGEON GENERAL'S OFFICE,
January 6, 1872.

SIR: I have the honor to lay before you, in duplicate, a list of the clerks and other persons employed in the Surgeon General's Office during the year ending December 31, 1871.

Very respectfully, your obedient servant,

J. K. BARNES,
Surgeon General.

Hon. W. W. BELKNAP,
Secretary of War, Washington, D. C.

List of persons employed in the Surgeon General's Office during the year 1871: *their occupation, time employed, compensation, and the State or Territory of their residence at the time of their appointment.*

Names.	Occupation.	Time employed.	Compensation.	State or Territory where residing at the time of appointment.
Samuel Ramsey..	Clerk class 4..	From January 1 to June 30, 1871.	$900 00	Virginia.
Do	Chief clerk ...	From July 1 to December 31, 1871.	1,000 00	Do.
Charles Harling.	Clerk class 3..	From January 1 to December 31, 1871.	1,600 00	Army.
John Watson....	Clerk class 2..	From January 1 to December 31, 1871.	1,400 00	Do.
S. A. Moulthrop .	....do	From January 1 to December 31, 1871.	1,400 00	Do.
R. Johnson	Clerk class 1..	From January 1 to December 31, 1871.	1,200 00	District of Columbia.
F. L. Apel	....do	From January 1 to December 31, 1871.	1,200 00	Army.
Anton Becker...	....do	From January 1 to December 31, 1871.	1,200 00	Do.
F. R. Sparks....	....do	From January 1 to December 31, 1871.	1,200 00	Pennsylvania.
Thomas O'Beirne.	....do	From January 1 to December 31, 1871.	1,200 00	Army.
A. Bischoff.....	....do	From January 1 to December 31, 1871.	1,200 00	Do.
J. P. Kepner....	....do	From January 1 to December 31, 1871.	1,200 00	Do.
Edward Shaw....	....do	From January 1 to December 31, 1871.	1,200 00	Massachusetts.
J. H. Collins....	Messenger ...	From January 1 to December 31, 1871.	840 00	District of Columbia.
Eli Jackson.....	Laborer.....	From January 1 to December 31, 1871.	720 00	Do.

The clerks, messenger, and laborer in the Surgeon General's Office have been usefully employed, and no person can be dispensed with without detriment to the public service, and the prompt dispatch of business "does not require the removal of any of them, and the appointment of others in their stead."

J. K. BARNES,
Surgeon General.

WAR DEPARTMENT,
BUREAU MEDICAL STATISTICS, &C.,
Washington, D. C., March 1, 1872.

SIR: In compliance with circular from your office I have the honor to state that there is but one civil employé connected with my office, namely, J. J. Beardsley, employed as chief clerk at a compensation of $1,600 per annum.

I have the honor to be, sir, very respectfully, your obedient servant,

J. H. BAXTER,
Assistant Medical Purveyor, United States Army.

Hon. W. W. BELKNAP,
Secretary of War.

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PAYMASTER GENERAL'S OFFICE,
WAR DEPARTMENT,
Washington, February 21, 1872.

SIR: I have the honor, in obedience to your circular letter of the 17th instant, and in compliance with the acts of April 20, 1818, and August 26, 1842, to forward herewith a list of the clerks, messengers, watchmen, and laborers employed in this Bureau during the year 1871, with the amount paid each, and the time employed, with residence at time of appointment.

These employés have been usefully engaged, and no change by removal or otherwise is recommended, except as mentioned in the last annual estimate forwarded to Congress with the report of the Secretary of War, viz, the reduction of the entire number of clerks to forty-nine and an increase of grades.

Very respectfully, your obedient servant,

BENJ. ALVORD,
Acting Paymaster General, United States Army.

The Honorable the SECRETARY OF WAR.

List of employés in office of Paymaster General for 1871.

Name.	Class.	Salary per annum.	Time paid for.	Amount paid.	Whence appointed.
G. D. Hanson	Chief clerk	$2,000	Year	$2,000 00	District Columbia.
J. L. Edwards	Four	1,800	....do	1,800 00	Do.
H. T. White	....do	1,800	....do	1,800 00	Vermont.
G. A. Churchill *a*	....do	1,800	Jan. 1 to Apr. 13	514 29	Maine.
W. T. Kent	....do	1,800	Year	1,800 00	Pennsylvania.
W. G. Newton	....do	1,800	Apr. 14 to Dec. 31	1,285 72	Ohio.
W. G. Newton *b*	Three	1,600	Jan. 1 to Apr. 13	457 14	
H. Maxwell	....do	1,600	Apr. 14 to Dec. 31	1,142 37	Do.
W. Cadman	Two	1,400	Year	1,400 00	District Columbia.
C. Boughter *c*	....do	1,400	Jan. 1 to Mar. 27	334 72	Pennsylvania.
T. J. Myers	....do	1,400	Year	1,400 00	District Columbia.
J. C. Ellis *a*	....do	1,400	Jan. 1 to Apr. 13	400 00	Pennsylvania.
W. J. Wilson	....do	1,400	Year	1,400 00	District Columbia.
E. Goodrich	....do	1,400	....do	1,400 00	Ohio.
C. H. Eckhardt	....do	1,400	....do	1,400 00	Pennsylvania.
B. P. Murray	....do	1,400	....do	1,400 00	New York.
F. H. Mundy	....do	1,400	....do	1,400 00	Do.
Z. S. Buckler	....do	1,400	....do	1,400 00	Maryland.
H. Maxwell *b*	....do	1,400	Jan. 1 to Apr. 13	400 00	
J. P. Pearson	....do	1,400	Year	1,400 00	New Hampshire.
J. A. Sterling	....do	1,400	....do	1,400 00	Ohio.
C. N. Bennit	....do	1,400	....do	1,400 00	New York.
F. H. Campbell	....do	1,400	....do	1,400 00	Vermont.
L. O. Bowie	....do	1,400	....do	1,400 00	Maryland.
E. N. Drury	....do	1,400	....do	1,400 00	Vermont.
A. M. Salmon	....do	1,400	....do	1,400 00	New Jersey.
T. M. Exley	....do	1,400	....do	1,400 00	Massachusetts.
C. F. Cobb	....do	1,400	....do	1,400 00	Maryland.
M. M. Bartlett	....do	1,400	....do	1,400 00	New Hampshire.
A. P. Dunlap	....do	1,400	....do	1,400 00	New York.
E. A. Pratt	....do	1,400	Mar. 21 to Dec. 31	1,065 56	Do.
F. I. Willis	....do	1,400	Apr. 14 to Dec. 31	1,000 00	Do.
A. P. Eastman	....do	1,400	....do	1,000 00	Massachusetts.
J. W. St. Clair	One	1,200	Year	1,200 00	District Columbia.
E. A. Pratt *d*	....do	1,200	Jan. 1 to Mar. 27	286 67	
F. I. Willis *b*	....do	1,200	Jan. 1 to Apr. 13	342 86	
A. P. Eastman *b*	....do	1,200	....do	342 86	
J. L. Enderle	....do	1,200	Year	1,200 00	Massachusetts.
James Cross	....do	1,200	....do	1,200 00	Pennsylvania.
J. S. Cleverdon	....do	1,200	....do	1,200 00	Ohio.
J. B. Royce	....do	1,200	....do	1,200 00	Vermont.
W. W. Gillingham *e*	....do	1,200	Jan. 1 to Apr. 30	398 90	New York.
Allen Wright	....do	1,200	Year	1,200 00	Vermont.
William Webb	....do	1,200	....do	1,200 00	Connecticut.
C. L. Chapman	....do	1,200	....do	1,200 00	New York.
H. E. Wentworth	....do	1,200	....do	1,200 00	Do.
A. T. Shurtleff	....do	1,200	....do	1,200 00	Rhode Island.
L. F. Cooke	....do	1,200	....do	1,200 00	New York.
R. B. Kepner	....do	1,200	....do	1,200 00	Pennsylvania.
J. L. H. Winfield	....do	1,200	....do	1,200 00	New York.
M. M. Myrick	....do	1,200	....do	1,200 00	Vermont.
E. McSweeny	....do	1,200	....do	1,200 00	District Columbia.
J. B. Diver	....do	1,200	....do	1,200 00	New York.
J. W. Moore	....do	1,200	....do	1,200 00	Pennsylvania.
E. L. Stone	....do	1,200	....do	1,200 00	New York.

a Dismissed April 13. *b* Promoted April 14. *c* Dismissed March 27. *d* Promoted March 28. *e* Resigned April 30.

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List of employés in office of Paymaster General for 1871—Continued.

Name.	Class.	Salary per annum.	Time paid for.	Amount paid.	Whence appointed.
H. F. White	One	$1,200	Year	$1,200 00	Vermont.
H. Holmes	do	1,200	do	1,200 00	New York.
H. Valk	do	1,200	do	1,200 00	Do.
C. L. Ketchum *f*	do	1,200	Apr. 7 to Dec. 31	857 14	Do.
T. J. McNamee *g*	do	1,200	Apr. 19 to Dec. 31	840 66	Massachusetts.
J. B. Collins *h*	do	1,200	Apr. 28 to Dec. 31	810 99	District Columbia.
G. Hickenlooper *i*	do	1,200	June 23 to Dec. 31	626 37	Iowa.
E. W. Moore	Messenger	840	Year	840 00	Pennsylvania.
R. E. Doyle, jr	do	840	do	840 00	District Columbia.
G. D. Hanson	Superintendent of building.	250	do	250 00	Do.
R. E. Doyle	Watchman	720	do	720 00	Do.
F. R. May	do	720	do	720 00	Do.
F. Armstrong	do	720	do	720 00	Do.
C. Brannan	do	720	do	720 00	Do.
M. Mooney	do	720	do	720 00	Do.
P. Carpenter	Laborer	720	do	720 00	Do.
J. Loveless	do	720	do	720 00	Do.
Total				79,676 25	

f Appointed April 7; seven days' pay stopped in July by Paymaster General United States Army.
g Appointed April 19. *h* Appointed April 28. *i* Appointed June 23.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., January 3, 1872.

SIR: I have the honor to transmit herewith a list of the clerks, messengers, and laborers employed in this office during the year 1871, required by act of Congress of August 26, 1842.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

The Honorable the SECRETARY OF WAR.

List of clerks, messengers, and laborers employed in the office of the Chief of Engineers during the year 1871.

Name.	Capacity.	Appointed from—	Time employed.	Salary.
William J. Warren	Chief clerk	New York	Since July 1	$2,000
H. N. Ober	Clerk, Class 4	District of Columbia	The whole year	1,800
G. M. Lockwood	do	New York	do	1,800
G. T. Woodward	do	District of Columbia	do	1,800
F. N. Barbarin	Clerk, Class 3	New Jersey	do	*1,800
James Eveleth	do	Virginia	do	1,600
P. J. Dempsey	do	do	do	1,600
C. L. Browne	do	Army	do	1,600
J. M. Jewell	Clerk, Class 2	Pennsylvania	do	1,400
H. C. Preuss	do	District of Columbia	do	1,400
William Jansen	do	New York	do	1,400
W. A. Anderson	do	Army	do	1,400
J. T. Stetson	Clerk, Class 1	District of Columbia	do	1,200
Z. W. Denham	do	do	do	1,200
Frederick Ringgold	do		do	1,200
W. C. Robison	do	Ohio	do	1,200
James A. D. Green	Messenger	District of Columbia	Since May 19	840
W. H. Deckman	Laborer	do	Since August 1	720
P. A. Breen	Messenger		To May 15	†840
Thomas Reynolds	Laborer	District of Columbia	To July 30	‡720

* To July 1. Since July 1, $1,600. † Resigned. ‡ Died.

The persons above named have all been usefully employed during the time named. The services of none of them can be dispensed with without detriment to the public service, and the better dispatch of business does not require the removal of any and the appointment of others in their stead.

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

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ORDNANCE OFFICE, WAR DEPARTMENT.
Washington, January 5, 1872.

SIR: In compliance with the acts of April 20, 1818, and August 26, 1842, I have the hon[or] to submit herewith duplicate lists of clerks and others employed in the Ordnance Office during the year 1871.

I have also to state that all the persons so engaged have been usefully employed, and that the services of none of them can be dispensed with without detriment to the public service.

Very respectfully, your obedient servant,

A. B. DYER,
Chief of Ordnance, United States Army.

Hon. W. W. BELKNAP,
Secretary of War.

Statement of clerks and other persons employed in the Ordnance Office during the year 1871.

Name.	Grade.	Whence appointed.	Time employed.	Salary.	Total pay.
J. P. Keller	Chief clerk	District of Columbia.	January 1 to Dec. 10	$2,000	$1,885 87
V. McNally	Class 4	Massachusetts	January 1 to Dec. 10	1,800	1,811 41
	Chief clerk		December 11 to Dec. 31	2,000	
John Moran	Class 4	Army	Whole year	1,800	1,800 00
E. A. Skillman	do	New Jersey	do	1,800	1,800 00
Wm. A. De Caindry	Class 3	Maryland	January 1 to Dec. 10	1,600	1,611 42
	Class 4		December 11 to Dec. 31	1,800	
A. W. Pentland	Class 3	Pennsylvania	Whole year	1,600	1,600 00
S. C. Hull	Class 1	Illinois	January 1 to April 30	1,200	1,344 92
	Class 2		May 1 to December 10	1,400	
	Class 3		December 11 to Dec. 31	1,600	
William H. Whitley	Class 2	New Jersey	Whole year	1,400	1,400 00
Charles Becker	do	Army	do	1,400	1,400 00
A. R. Benner	do	Pennsylvania	do	1,400	1,400 00
J. W. Shugert	do	do	January 1 to April 23	1,400	439 46
W. R. Swan	Class 1	Massachusetts	January 1 to Dec. 10	1,200	1,211 42
	Class 2		December 11 to Dec. 31	1,400	
F. E. Dake	Class 1	Pennsylvania	Whole year	1,200	1,200 00
L. J. Bryant	do	Wisconsin	do	1,200	1,200 00
William H. Kuhns	do	Pennsylvania	do	1,200	1,200 00
R. L. Walter	do	Army	do	1,200	1,200 00
W. D. Postal	do	Tennessee	June 24 to Dec. 31	1,200	623 [illegible]
Charles S. Keller	do	District of Columbia.	December 15 to Dec. 31	1,200	55 [illegible]
N. Mullikin	Messenger	Maryland	Whole year	840	840 00

A. B. DYER,
Chief of Ordnance, United States Army.

ORDNANCE OFFICE, *January 5, 1872.*

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WAR DEPARTMENT,
BUREAU OF REFUGEES, FREEDMEN AND ABANDONED LANDS,
Washington, D. C., March 2, 1872.

SIR: In accordance with circular from the War Department, dated February 17, 1872, calling attention to acts of Congress of April 20, 1818, and August 26, 1842, I have the honor to forward a report giving the names of all officers, clerks, and other persons employed in this Bureau, with their time of service and the pay of each during the year ending December 31, 1871. Those marked "W" were employed in the office in this city. As soon as the services of any could be dispensed with they have been discharged.

Very respectfully, your obedient servant,

E. WHITTLESEY, *A. A. A. G.*,
In absence of the Commissioner.

The HON. SECRETARY OF WAR.

Report of clerks and other persons employed in Bureau of Refugees, Freedmen and Abandoned Lands during the year ending December 31, 1871, *required by acts of Congress, April* 20, 1818, *and August* 26, 1842.

Name.	Occupation.	No. of months' service.	Amount paid.	Remarks.
W E. Whittlesey	A. A. A. General	12	$3,795 20	Retained officer.
W George W. Balloch	Chief disbursing officer	11	3,370 37	Do.
E. C. Beman	Agent	12	2,731 00	Do.
F. A. Seely	....do	12	2,067 00	Do.
W J. M. Brown	Chief quartermaster	12	2,506 68	Do.
William L. Vanderlip	Agent	9	956 31	Do.
W Robert Reyburn	Medical officer	12	2,400 00	
W William P. Drew	Agent	12	2,400 00	
W H. D. Bean	....do	3	600 00	
W John A. Duren	....do	12	2,100 00	
W E. P. Rankin	....do	4	700 00	
W S. A. Terry	....do	12	2,100 00	
W John H. Cook	....do	12	2,200 00	
W A. N. Thompson	....do	12	2,100 00	
W J. C. Rock	Clerk	12	1,800 00	
W J. H. Weirick	....do	3	450 00	
W T. Taylor Page	....do	12	1,900 00	
H. H. Ray	....do	12	1,950 00	Agent, from July to December.
W Samuel R. Warren	....do	12	1,800 00	
W M. R. Woodward	Printer	4	466 68	
W C. H. Dow	Clerk	6½	950 00	
W Lamech Duvall	....do	12	1,800 00	
W C. W. Brown	....do	6½	844 42	
W E. S. Fowler	....do	4	533 32	
W Paul Ertelt	....do	6½	844 42	
W D. S. Blue	....do	12	1,599 96	
W John D. Bloor	....do	12	1,566 64	
W Edward Johnson	....do	4	533 32	
W O. H. Reed	Printer	4	500 00	
W W. S. Eaton	Clerk	12	1,500 00	
W D. C. Patterson	Special agent	12	1,500 00	
W James T. Elliott	Clerk	4	533 32	
W John H. Riggles	....do	12	1,400 00	
W A. Meyer		3	350 01	
W C. C. Wilson		3	350 01	
W E. W. Roach		12	1,400 00	
W Robert A. Balloch		3	350 01	
W C. N. Weiss		12	1,400 00	
W Frank Wilson		12	1,300 00	
D. Boyden		3	300 00	
S. S. Wager	Clerk	12	1,500 00	
George D. Johnson	....do	½	75 00	
J. B. Coons	Agent	12	2,100 00	
A. D. Coons	Clerk	3	225 00	
William Lytton	Messenger	12	540 00	
B. H. Collins	Clerk	3	450 00	
Hugh McElderry	Messenger	12	480 00	
W A. W. Shadd	Clerk	2½	333 33	
W John D. Frederic	....do	3½	427 79	
W Thomas Andrew	....do	3	300 00	

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Report of clerks, &c., in Bureau of Refugees, Freedmen and Abandoned Lands, &c.—Continued.

Name.	Occupation.	No. of months' service.	Amount paid.	Remarks.
w P. Glennon	Medical officer	12	$1,750 02	
w C. B. Purvis	do	12	1,500 00	
w J. Tabor Johnson	do	6	750 00	
William R. Wilmer	Agent	3	375 00	
H. C. Percy	do	12	900 00	
J. C. McMullen	do	3	300 00	
John F. Campion	Clerk	3	375 00	
John Grainger	Messenger	3	75 00	
John H Wager	Agent	12	1,500 00	
Andrew Coats	do	3	510 50	
George Williams	Messenger	3	51 00	
Mark Edwards	Agent	12	1,900 00	
David C. Mooney	Clerk	12	1,200 00	
John L. Wilson	Agent	3	399 66	
James Tucker	Messenger	12	480 00	
Samuel Walker	Agent	6	600 00	
Nathan Ritter	do	3	150 00	
B. G. Bryan	do	2	100 00	
John Tyner	Messenger	1	15 00	
John M. Foote	Clerk	1	117 33	
A. Brousard	do	4	600 00	
Reuben Abrams	Messenger	4	200 00	
S. G. Burbridge	Agent	3	375 00	
P. J. Overley	Clerk	12	1,425 00	
George Davis	Messenger	2	120 00	
Samuel J. Wright	Agent	3	150 00	
Henry Page	do	12	1,500 00	
w N. E. Robinson	Clerk	12	1,200 00	
F. C. Revalls	do	3	300 00	
John McMenanrin	Messenger	3	249 00	
w M. E. Rust	Clerk	3	225 00	
w C. E. Roseckrans	do	3	225 00	
w N. R. Gerard	Messenger	5	300 00	
C. S. Blackmon	do	3	180 00	
w William Hoffman	do	6	360 00	
w E. R. Belcher	Clerk	12	600 00	
w Thomas B. Warrick	do	2½	200 00	
w W. G. Wynn	do	2½	200 00	
w J. T. Settle	do	12	650 00	
w J. H. Williams	do	2⅔	216 66	
w D. A. Stroken	do	6	350 00	
w James M. Gregory	do	10½	525 00	
w O. S. B. Wall	do	6	300 00	
w J. M. Hawkesworth	do	12	600 00	
w D. B. Nichols	Special agent	12	749 96	
w T. T. Jackson	Messenger	12	360 00	
w C. C. Parker	do	12	360 00	
w Joseph W. Morris	do	8	320 00	
w R. K. Morris	do	12	330 00	
w Caroline Tolson	Nurse	12	120 00	Hospital.
w Amelia Weldon	do	8	64 00	Do.
w Betty Lawson	do	12	96 00	Do.
w Marion Adams	do	12	96 00	Do.
w Martha Chambers	do	12	144 00	Do.
w Cornelius Hatch	do	8	90 00	Do.
w Henry Jenkins	do	12	114 00	Do.
w Jessie Moulton	do	12	60 00	Do.
w Isaac Palmer	do	12	163 50	Do.
w John Armstead	Cook	6	108 00	Do.
w John E. Butler	do	12	180 00	Do.
w John Faneroy	do	12	120 00	Do.
w Hester Armstead	do	12	96 00	Do.
w Ellen Downing	Laundress	12	120 00	Do.
w Kezziah Griggs	do	12	120 00	Do.
w Charles Banks	Watchman	12	180 00	Do.
w Harrison Gordon	Carpenter	2	30 00	Do.
w W. H. Ross	Clerk	3	300 00	Do.
w James A. Small	do	3	300 00	Do.
w J. S. Lyon	do	6½	633 33	Do.
w James H. Smith	do	8	400 00	
w G. L. Ford	do	12	600 00	
James Ware	Agent	9	600 00	
J. H. Durkee	do	3	585 00	
L. Beecher Foster	Clerk	3	375 00	
Henry Aikens	Messenger	3	90 00	

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Report of clerks, &c., in Bureau of Refugees, Freedmen and Abandoned Lands, &c.—Continued.

Name.	Occupation.	No. of months' service.	Amount paid.	Remarks.
E. Goerner	Clerk	12	$650 00	Hospital.
Richard Peck	do	12	385 00	Do.
T. J. Davis	Laborer	3	92 00	Do.
Reverdy Hall	do	12	360 00	Do.
J. L. N. Bowen	do	3	75 00	Do.
Jerome Riley	do	4	100 00	Do.
Charles W. Smith	do	8	195 00	Do.
M. D. Wright	Matron	12	186 00	Do.
Rebecca Kockman	Seamstress	12	180 00	Do.
Henry Bean	Nurse	12	180 00	Do.
Lucius Horkum	do	12	180 00	Do.
William Brown	do	12	114 00	Do.
Owen Chase	do	12	120 00	Do.
Matilda Roberts	do	7	70 00	Do.
Mary Adkins	do	10	76 00	Do.
R. W. Tompkins	Clerk	3	450 00	
W. Godsty	do	3	375 00	
John H. Johnson	do	3	199 99	
R. D. Beckley	Agent	3	210 00	
John James Calvert	Engineer	12	870 00	Hospital.
Henry Mason	Fireman	11	660 00	Do.
Albert Parker	Messenger	3	210 00	
Robert Delaney	do	3	180 00	
Elias Plumber	do	12	720 00	
Albert Burke	do	3	180 00	
C. O. Harris	do	12	360 00	
R. L. Mitchell	do	12	360 00	
W. H. Longstreet	Watchman	3	125 00	
J. G. B. Marshall	do	12	300 00	
E. H. Grusty	do	12	300 00	
E. E. Reed	do	12	300 00	
John Smith	Hostler	12	600 00	Hospital.
Daniel Williams	do	12	600 00	Do.
John Sidney	do	12	600 00	Do.
Joseph Hanley	do	12	600 00	
Thomas Payne	do	1	50 00	
John H. Bond	do	12	600 00	
DeMies Budd	do	3	150 00	
Daniel Reed	Teamster	12	440 00	
Addison Filmore	do	9	350 00	
William Talbort	do	3	150 00	
James H. Sherman	Laborer	12	300 00	
J. W. Bell	do	6	150 00	
William H. Thompson	do	2	50 00	
N. H. Alexander	do	12	300 00	
G. E. Copeland	do	12	300 00	
Daniel Carrol	do	8½	212 50	
William Middleton	do	10	250 00	
Eliza Heacock	Matron	4	100 00	Orphan's Home.
S. N. Songster	Assistant matron	4	80 00	Do.
Allen Poindexter	Laborer	5	166 00	
Joseph Mitchell	Fireman	9	304 00	
John Willis	do	5	180 00	
Armstead Walker	do	10	357 50	
James T. Rollins	Hostler	2	60 00	
Joseph E. Lee	Clerk	6½	325 00	
John H. Butler	do	10	500 00	
J. William Cole	do	6 1-5	310 00	
John B. Bascom	do	10	500 00	
William H. Thompson	do	10	500 00	
H. A. Napier	Messenger	3	75 00	
O. C. French	Agent	3	150 00	
George Gray	Cook	9	90 00	Hospital.
William Allen	Watchman	1	25 00	
Albert Cook	Messenger	3	134 00	
Richard Cooper	Cook	7	84 00	Do.
Jacob DeWitter	Clerk	4½	225 00	
Fannie Stewart	Nurse	5	40 00	Do.
T. W. Andrew	Messenger	5	175 00	
T. J. Shadd	Clerk	4	200 00	
H. M. Brown	do	4	198 33	
E. W. Turner	do	3½	175 00	
Cornelia Hacknern	Nurse	4	32 00	Do.
James Wells	Watchman	3½	87 50	
W. W. Stewart	Seamstress	3	30 00	Do.
Nathan Stewart	Nurse	3	30 00	Do.

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Report of clerks, &c., in Bureau of Refugees, Freedmen and Abandoned Lands, &c.—Continued.

Name.	Occupation.	No. of months' service.	Amount paid.	Remarks.
w Lucy Galton	Cook	3	$15 00	Hospital.
w Ann Henry	....do	3	15 00	Do.
w P. I. Locke	Clerk	2½	125 00	
w Robert Thompson	Assistant engineer	2	25 00	Do.
w James Hurd	Nurse	1½	12 00	Do.
w J. M. Jones	Watchman	2	50 00	Do.
w Harry Spackman	Messenger	10	192 00	Do.

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LETTER

FROM

THE SECRETARY OF WAR,

ACCOMPANYING

Engineer reports upon the survey of the mouth of Saint Mark's River and of Choctawhatchee River, Florida.

APRIL 18, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *April* 17, 1872.

The Secretary of War has the honor to submit to the United States Senate and House of Representatives two engineer reports, one upon the survey of the mouth of Saint Mark's River, Florida, from Spanish Hole to Saint Mark's, and the other upon the examination of the Choctawhatchee River, which were made under the provisions of the third section of the act of March 3, 1871, providing for the improvement of certain rivers.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 13, 1872.

SIR: I beg leave to submit herewith copies of, 1st, a report from Colonel Simpson, Corps of Engineers, upon the survey of the mouth of Saint Mark's River, Florida, from Spanish Hole to Saint Mark's; and, 2d, a report upon the examination of the Choctawhatchee River, Florida, both made in compliance with the provisions of the third section of the act of March 3, 1871, making appropriations for the improvement of certain rivers and harbors.

1. Colonel Simpson reports that the depth of the existing channel is sufficient to accommodate the present trade of Saint Mark's, and that it is said to be the intention of the Jacksonville, Pensacola and Mobile Railroad Company to extend their road to deep water at Spanish Hole, below which there is good water for vessels drawing nine feet.

2. He also reports that there is available at all times in the Choctawhatchee, between its mouth and Geneva, the present head of navigation, a distance of one hundred and sixty miles, about eight feet of water, but that its navigation is obstructed in many places by snags, sawyers, overhanging trees, &c., and also two wrecks of steamboats. The improvement he proposes is the removal of these obstructions and the straightening the channel of the river in some places, for which he submits estimates of $98,716, $52,291, and $34,332, respectively, based upon the

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nature and extent of the improvement proposed. The last sum he believes to be sufficient for the present demands of the trade of the river.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Mobile, Alabama, April 2, 1872.

GENERAL: I have the honor to submit herewith copy of the report of Mr. Joseph Burney, assistant engineer, on the survey at the mouth of Saint Mark's River, from Spanish Hole to Saint Mark's, Florida, authorized by act of Congress approved March 3, 1871.

The difficulties in the way of navigation from the Gulf of Mexico to Saint Mark's, it will be perceived, are not so much the want of sufficient depth of water in the river, it being nine feet, except near the junction of the Wakulla River, where for about two hundred feet the river requires deepening eighteen inches through limestone rock, as the obstructions caused by oyster bars which make the channel very crooked, especially at "Devil's Elbow" and "Duck Trap." The work therefore of improving the channel will be principally cutting through these oyster bars, thus making the channel less tortuous.

The cost of thus improving the channel, making the proposed cuts two hundred feet wide at bottom, with side slopes of two and one-half base to one foot vertical and nine feet deep, Mr. Burney estimates at $40,866.10.

Mr. Burney, however, also states that he sees "no prospect at present of Saint Mark's rising in importance for many years to come." Under these circumstances he does not think it would be of any advantage to the State or district for Congress to grant an appropriation for the improvement of the river; the present channel being more than sufficient to accommodate the very limited business done.

In addition he reports that it is in contemplation by the Jacksonville, Pensacola and Mobile Railroad Company to extend their road to deep water at Spanish Hole, below which there is a good channel, allowing vessels to come up drawing nine feet. This would greatly revive the trade of the port and obviate the necessity of anything being done in the channel of the river between that point and Saint Mark's above.

For the above reasons, I do not recommend any appropriation for the improvements of Saint Mark's River.

I forward to-day, by mail, in a separate roll, one tracing of survey and one diagram, showing current observations.

I am, very respectfully, your obedient servant,

J. H. SIMPSON,
Colonel of Engineers, United States Army.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, United States Army, Washington, D. C.

MOBILE, ALABAMA, *March*, 1872.

GENERAL: In accordance with your instructions, dated the 26th day of June, 1871, placing me in charge of the survey of Saint Mark's River.

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Saint Mark's, Florida, immediately after receiving the same, I set out for Saint Mark's, and arrived on the 6th day of July following.

I at once commenced to carry out the first part of your instructions, viz:

"You will first proceed to make an examination, and in this connection you will consult pilots, masters of vessels, merchants, and any other persons, who may be acquainted with the nature of the obstructions, and get their views as to the best way of overcoming them; you will also obtain all the information possible as to the present commerce of the place, and the probable effect of the improvement on its increase.

"The result of this examination you will transmit as soon as possible, with a rough estimate as to the cost of obtaining a good channel up to Saint Mark's with the same depth of water as is now on the outer bar."

From the above instructions, and the data in my possession, I submit the following report:

Saint Mark's, Florida, is situated on the north bank of the Saint Mark's River, near its junction with the Wakulla River. It is a mere village and contains the railroad depot and wharf belonging to the Jacksonville, Pensacola and Mobile Railroad Company, which run the cars three times per week between Tallahassee and Saint Mark's. It also contains a post-office, two stores, and about seventy-five inhabitants, white and colored. A deputy collector of customs is stationed here, under the control of the collector of customs, who resides at Cedar Keys, Florida.

There are no kind of manufactories in or near the village, the inhabitants being principally fishermen, who make a very poor living by obtaining fish from the river for the Tallahassee market.

About three miles from Saint Mark's stands the village of Newport, (famous for its sulphur springs,) which was once an enterprising and flourishing place; contained about 1,500 inhabitants, ten or twelve large stores, warehouses, wharves, turpentine distillery, cotton-press, steam, saw, and grist mills, drug-store, &c., &c.

From various causes the trade of the place declined, and now does not contain a single business place whatever, and only twenty-five or thirty inhabitants. Newport was included in the customs district of Saint Mark's.

I have endeavored to obtain the exact amount of imports and exports for the last ten years from official sources, but have not been able to do so. My information is derived from merchants and others who were engaged in the business at that time, and I believe the estimates formed will be found correct.

Previous to January 1, 1861, the commerce of Saint Mark's was quite extensive. Between thirty and forty thousand bales of cotton were annually shipped from the port, in addition to large quantities of tobacco, tar, pitch, turpentine, resin, beeswax, lumber, hides, and furs. The principal exports were chiefly obtained from Middle Florida and Southern Georgia.

The shipping season usually commenced in September, and ended in May the following year. Trade was principally coastwise, nearly all the vessels clearing for New York; occasionally a vessel would clear for a foreign port, freighted with lumber, but not often.

At that time there were five pilots constantly employed on the river, licensed by the State, who were authorized to charge $3.50 per foot on all vessels drawing eight feet or under, and $3 per foot on all drawing over eight feet.

In 1861 the port was closed by blockade, and all business was suspended. The same year the Atlantic and Gulf Railroad, leading from

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Savannah, Georgia, was completed to Thomasville, an inland town in the southern portion of the same State, thirty-five miles north of Tallahassee, the capital of Florida. This railroad runs through the rich cotton district of Southern Georgia and along the line of Northern Florida.

The trade of this district formed the principal support of the port of Saint Mark's, the object of the Atlantic and Gulf Railroad Company being to turn this trade from Saint Mark's and carry it to Savannah. But about this time (1861) the railroad was seized by the southern military authorities, and used principally by them until destroyed by General Sherman's army in the winter of 1864. In 1865 peace was declared, and the port of Saint Mark's was again open to trade.

The Atlantic and Gulf Railroad, being destroyed, was not in condition to carry off the trade of the district spoken of to Savannah, and for a short time Saint Mark's flourished, exporting, in the season of 1865 and 1866, 17,000 bales of cotton, in the season of 1866 and 1867 about 11,000 bales, and in the season of 1867 and 1868 upward of 4,000 bales. At this time, (March, 1868,) the business portion of Saint Mark's was destroyed by fire, comprising six large warehouses, a wharf over four hundred feet long, ice-house, and steam cotton-press. By this time the Atlantic and Gulf Railroad was repaired and in running order, and a connecting link was completed between it and the Jacksonville, Pensacola and Mobile Railroad, running east from Tallahassee to Jacksonville, Florida. This link connected Tallahassee, Florida, and Savannah, Georgia.

These railroad connections completely carried away all the trade of Saint Mark's, and reduced it to its present condition. There is very little shipping business done at the port now. A steamer arrives from New Orleans about twice a month, with an average of five hundred barrels of freight, principally for Middle Florida. The steamers take out no exports, except a little cotton in the winter to New Orleans.

An oyster business is done here in the fall and winter seasons, by sloops and schooners of about five to ten tons burden and drawing some three feet of water, running between Saint Mark's and Apalachicola, bringing oysters in considerable quantities from the latter port.

The future of Saint Mark's as a port remains entirely in the power of the Jacksonville, Pensacola and Mobile Railroad Company. Should they take up the railroad between Tallahassee and Saint Mark's, the latter place, as a port, is destroyed. On the other hand, should they extend the railroad to deep water, at Spanish Hole, (as Mr. I. G. Gibbs, chief engineer of the railroad company, informs me the company desire to do,) it would have a very great effect in the revival of the commerce of the port. Should this be done there would be no necessity to improve the river above the Spanish Hole, and below there is a good channel, which would allow vessels drawing nine feet water to come in at low tide.

But upon careful inquiry I find it is not the policy of the railroad company to improve Saint Mark's. On referring to the maps of the State of Florida it will be seen, should the bulk of the cotton crop of Middle Florida and Southern Georgia be shipped at Saint Mark's, the company would lose the long land carriage to Savannah, Georgia, and Jacksonville, Florida, and gain only the short carriage to Saint Mark's.

It will be seen by the following table that the railroad company's charges for carrying cotton, pork, corn, flour, &c., to Saint Mark's are very high as compared with other towns:

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For carrying pork, corn, flour, &c.

From Tallahassee to Saint Mark's, 21 miles, 25 cents per 100 pounds.
From Tallahassee to Live Oak, 61 miles, 33 cents per 100 pounds.
From Tallahassee to Jacksonville, 165 miles, 45 cents per 100 pounds.

For carrying cotton.

From Tallahassee to Saint Mark's, 21 miles, 40 cents per 100 pounds.
From Tallahassee to Jacksonville, 165 miles, 85 cents per 100 pounds.

The uncertain policy of the railroad company has a most damaging effect upon the prosperity of the port, as no encouragement can be offered for merchants to employ their capital when it can be so readily lost by the removal of the railroad.

After taking a careful review of the information I have obtained respecting the future prospects of Saint Mark's, I believe that with proper industry and a very large outlay of capital, also carrying the railroad to Spanish Hole, a very large amount of business could be done here.

There is no port on the east having the advantage of a railway communication nearer than Cedar Keys, a distance of ninety miles; on the west none nearer than Pensacola, a distance of two hundred and eighty miles. Cotton can be carried from here to the market in New York cheaper than by the present route via Savannah.

The cost of carrying cotton by the above route is as follows, viz: From Tallahassee to Jacksonville, per one hundred pounds, eighty-five cents, and from Jacksonville to Savannah, thirty-two cents; from Savannah to New York by sail, fifty cents—making a total cost of $1.65 per hundred pounds.

By the Saint Mark's route, it could be carried from Tallahassee to Saint Mark's for twenty cents, from Saint Mark's to New York for seventy-five cents. By the Savannah route it only takes one week to New York; by the Saint Mark's route one month. Therefore I allow three weeks' interest on the value of the cotton, at ten per cent., would equal ten cents per one hundred pounds; thus bringing cost of Saint Mark's route $1.05, against $1.65, the cost of Savannah route—leaving a balance in favor of Saint Mark's of sixty cents per one hundred pounds. Thus should Saint Mark's export but half the forty thousand bales of cotton it exported up to 1861, allowing five hundred pounds to the bale, there would be saved to the cotton-growers of the district an annual sum of $60,000.

On the other hand, Saint Mark's has no accommodation at present for the transaction of business; no wharf of importance, the present one being only about sixty by forty feet; no warehouses or cotton-presses of any description.

The site of the village is upon low, flat, marshy land, covered over with weeds and stagnant water, and the climate extremely unhealthy, it being nearly impossible for a new resident to escape having severe attacks of chills and fever. The coast is also subject to severe gales in the fall months, which sometimes do great damage.

I see no prospect at present of Saint Mark's rising in importance for many years to come.

Under these circumstances I do not think it would be of any advan-

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tage to the State or district to grant an appropriation for the improvement of the river, the channel being more than sufficient to accommodate the very limited business done on it.

I would, however, recommend that an appropriation of $1,000 be granted for the purpose of properly staking out the channel, which would prove of great value to vessels now using the river.

Passing from the business done on the river to an examination of it for improving the channel, I find the river to run through a low, flat, swampy country, and at high tides the land on both sides is covered for a wide distance with water.

The rise and fall of the tides vary to a great extent, being considerably influenced by the winds; but the ordinary rise and fall I found to be two feet four inches—high water at the Saint Mark's wharf being about fifty minutes later than opposite Saint Mark's light-house. The fall of the river between the points, ascertained by careful leveling, is twelve and nine-tenths inches.

Careful soundings of the river show a depth of nine feet of water in the present channel, with the exception of about two hundred feet near the junction with the Wakulla River, and this part of the channel will be required to be deepened about eighteen inches through limestone.

On consulting with the pilots I found they did not complain of the depth of water, but the difficulties met with in avoiding the numerous oyster bars, which at some portions of the river make the channel exceedingly crooked, especially at the Devil's Elbow and Duck Trap.

The work to improve the channel will be principally cutting through these oyster bars. I found them to be composed of from six to eight inches of shells, and, for a depth of over nine feet, mud and sand, which could easily be removed, so that a good channel could be obtained at a very reasonable cost.

To accompany this report I have prepared a plan of the river, drawn to a scale of one inch to five hundred feet, made entirely from field-notes. Should the work be carried out I would recommend following the old channel, as shown by plan, and the cut to be made below mouth of Wakulla River two hundred feet wide at bottom with side slopes of two and one-half to one, and nine feet deep at mean low water; especial points for improvement being indicated by blue lines.

Vessels drawing nine feet of water find no difficulty in passing the long bar opposite the light-house, and the Spray Bar, &c., until near Folly Bar; but here, owing to this bar damming back the water, causing it to run into the channel, thus creating a rapid current on a falling tide, there is some difficulty though a sufficiency of water.

Passing Folly Bar the channel remains good until arriving at the commencement of the Devil's Elbow, the most dangerous part of the river. At this point the channel turns very suddenly at nearly a right angle, and as vessels endeavor to take advantage of the tide running in the direction they are going, it is difficult, either in ascending or descending, to keep large vessels from drifting on the bar immediately in front.

From this point the channel is exceedingly crooked for a distance of about two thousand feet; this I propose to straighten as shown by plan.

Passing up the river the channel remains good until near the entrance of Big Bayou, which would require widening and straightening; the same work would be required in the channel at the Duck Trap; passing on, a good channel is found to the wharf, with the exception of the portion shown near the junction with the Wakulla River.

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To make the improvements I have described will require the following amount of work to be done:

32,864 cubic yards dredging sand, mud, and shell per cubic yard, at 50 cents per yard	$16,432 00
6,573 cubic yards of rock cutting per cubic yard, at $3 per yard	19,719 00
Staking out channel	1,000 00
Engineering and contingencies, 10 per cent	3,715 10
	$40,866 10

A good channel containing nine feet of water could be made for the sum of $40,866.10, but, as I stated before, the business done upon the river is not of sufficient importance to appropriate the amount of money required to improve the channel.

I have the honor to remain, very respectfully, your obedient servant,

JOSEPH BURNEY,
Assistant Engineer in charge of Survey.

Brevet Brigadier General J. H. SIMPSON,
Colonel of Engineers, United States Army, Mobile, Ala.

UNITED STATES ENGINEER OFFICE,
Mobile, Alabama, April 6, 1872.

GENERAL: I have the honor to submit herewith the report of Mr. Joseph Burney, on his examination of Choctawhatchee River, Florida, authorized by act of Congress approved March 3, 1871.

This report shows that vessels drawing less than nine feet of water can pass eastward from Pensacola Bay, through Santa Rosa Sound, for a distance of twenty-six miles. Leaving the sound, they enter what is commonly called "The Narrows," ten miles in length and from one-fourth to one-half mile wide, in which there is a depth of only from four to five feet of water. The channel in these narrows is very difficult of navigation from the number of bars to be met, and, on account of their shifting character, is represented as not being susceptible of permanent improvement.

About four miles above the Narrows there is a narrow outlet to the Gulf, called East Pass, having a depth of five feet of water on the bar, but which, on account of the violent action of the sea, is very seldom used.

All merchandise intended for ascending the Choctawhatchee River is obliged to be reshipped in barges, propelled by poles, at a small town called Freeport, five miles up Le Grand Bayou. This is a place at the present time of considerable importance, on account of having direct communication with New Orleans and Pensacola by means of several schooners, from fifteen to thirty-five tons burden, besides occasional steamboats. It is represented as unsuitable as a depot for transshipment of merchandise on account of its situation, causing the barges running on the river to be poled an unnecessary distance of sixteen miles. This is caused by all land suitable for a depot at the mouth of the river being held by the General Government for the purpose of obtaining timber for the Navy; although from all the information which could be obtained, the land is pronounced totally unfit for this purpose.

Neither the means nor the time before the winter floods admitting of

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an accurate survey of the river, in accordance with my instructions, only such an examination of it, from its mouth to Geneva, the present head of navigation, a distance of about one hundred and sixty miles, was made, as would be sufficient to predicate estimates for its improvement.

The result of this examination shows that there is available at all times between the mouth of the river and Geneva at least eight feet of water, three feet more than can be carried through "The Narrows" at the east end of Santa Rosa Sound, and that the obstructions consist principally of snags, sawyers, overhanging trees, two wrecks of steamboats. Another source of difficulty arises from the, in some instances, tortuous direction of the channel. The improvements therefore proposed are the removal of the obstructions mentioned, and the straightening of the channel in places.

Mr. Burney submits three estimates. The first, amounting to $98,716.80, contemplates a thorough improvement of the river; but the present commerce, in his opinion, will not justify so large an appropriation by Congress.

The second, amounting to $52,291.20, contemplates not so exhaustive an improvement, but one which would be sufficient to meet all present and prospective requirements for many years to come.

The third estimate, amounting to $34,332, is for the removal of obstructions which make the navigation of the river both difficult and dangerous, even for the amount of trade done on it at the present time. This amount is about 10 per cent. of the value of the merchandise carried on the river during the past year, and it is believed this extent of improvement will be sufficient for at least five years to come.

As the report shows that the value of the available timber of commerce along the river is estimated from $50,400,000 to $144,000,000, depending upon the distance in which it can be profitably hauled, and the value of the business done during the past year, was as much as $284,000, I respectfully recommend an appropriation by Congress of the least amount estimated by Mr. Burney for improving the river, and which the present amount of trade demands, namely $34,332.

Mr. Burney took repeated cross-sections of the river during his examination, all of which have been mapped, and, with the other information obtained by him, have been placed on file in this office for future reference.

I am, very respectfully, your obedient servant,

J. H. SIMPSON,
Colonel of Engineers, United States Army.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, United States Army, Washington. D. C.

UNITED STATES ENGINEER OFFICE,
Mobile, Alabama, April 6, 1872.

GENERAL: In accordance with your instructions, dated the 11th of November, 1871, placing me in charge of the examination and survey of the Choctawhatchee River, Florida, I have the honor to report that after making the necessary arrangements, myself and assistant, William S. Simpson, left Mobile, November 14, 1871, on board the United States light-house schooner Florida, arriving in Pensacola November 17, when I at once commenced to carry out the first part of your instructions, viz: You will first make an examination, and in this connection you will consult such persons as you can find who may

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be acquainted with the nature of the obstructions, and get their views as to the best manner of removing them. You will also obtain all the information possible as to the present commerce of the river, and the probable effect of any improvement on its increase; also, the character and resources of the country bordering on it and its tributaries. The results of this examination you will transmit to this office as soon as possible, with an estimate of the cost of such improvements as may be suggested by your examination.

Also, your verbal instructions to obtain all the information possible, without any unnecessary delay, respecting the navigation of Santa Rosa Sound and Choctawhatchee Bay.

From the above instructions and the data in my possession, I submit the following report:

Pensacola is situated on the Pensacola Bay, twelve miles from the Gulf of Mexico, in the county of Escambia, Florida, and is the only port for all exports and imports ascending and descending the Choctawhatchee River. It contains a population of 3,000 inhabitants, and is a thriving commercial town, and naturally interested in any improvements that may be made upon the river. Seven miles down the bay is the town of Warrington, which contains the United States navy-yard, and is situated on one of the finest portions of the southern coast.

Leaving Pensacola, we pass into the Santa Rosa Sound, which is about twenty-six miles long and two miles wide, and contains a depth of water, as shown by Coast Survey charts, of from seven to ten feet. It is divided from the Gulf by a long, narrow island of sand, called Santa Rosa. Leaving the sound, we enter what is commonly called the Narrows, ten miles in length and from one-fourth to one-half mile wide, having a depth of from four to five feet of water. It is very difficult of navigation, on account of the numerous shifting sand-bars, and is not susceptible of permanent improvement on account of the changing nature of the bottom. Passing on, we enter the Choctawhatchee Bay, which is about forty miles long, seven miles wide, and contains a sufficient depth of water for all navigable purposes. About four miles above the Narrows, there is a narrow outlet to the Gulf, called East Pass, having a depth of five feet of water on the bar; but which, on account of the violent action of the sea, is very seldom used.

All merchandise intended for ascending the Choctawhatchee River is obliged to be reshipped at a small town called Freeport. To arrive at this place, we leave the north side of the bay, about three miles from the mouth of the Choctawhatchee River, and enter Le Grange Bayou, and ascend for a distance of five miles, before arriving at Freeport. This is a small place, containing five stores and about one hundred inhabitants. It is a place at the present time of considerable importance, on account of having direct communication with New Orleans and Pensacola, by means of several schooners from fifteen to thirty-five tons burden, besides occasional steamboats.

Freeport, as a depot for the transshipment of merchandise intended for ascending the Choctawhatchee River, is entirely unsuitable, on account of its situation, causing the barges running on the river to travel an unnecessary distance of sixteen miles. This is caused by all land suitable for a depot at the mouth of the river being held by the General Government, for the purpose of obtaining timber for naval purposes, although, from all the information I could obtain, the land is pronounced to be totally unfit for the purpose for which it is held.

On reaching the river, I determined, with your sanction, as neither the means nor the time were sufficient to make an accurate survey, to

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commence at the mouth and proceed up the river, taking as many sections of the same, and as full notes of the physical features of the valley. and the difficulties to be overcome, as was possible under the circumstances.

The principal mode of navigation adopted on the Choctawhatchee River is by barges, from ten to fifteen tons burden, drawing from four to five feet of water, and propelled by poles upward of thirty feet long; the barges carrying from six to ten polemen, and making from two to three miles per hour, generally accomplishing the round trip from Geneva to Freeport and back, a distance of three hundred and forty miles, in from fourteen to fifteen days. A very rapid current is met with in ascending the river, which takes from ten to twelve days to surmount; while, in returning, the barge drifts with the current in from three to four days, from Geneva, the head of navigation, to Freeport.

Entering the river from the bay, I find it has seven mouths, forming a connection with the main river at a distance from the bay of from seven to ten miles. We carefully examined the mouths, and find the one commonly used, called Mitchell's River, to be the one at present best adapted for commercial purposes. Passing up the river, we find each side of the same composed of low, swampy marshes, covered with a thick undergrowth, interspersed with cypress timber, of good quality, easily obtainable, and for which at the present time there is a great demand in the market. This swamp continues on each side of the river for a distance of one hundred miles, with occasional small bluffs or hammocks, generally covered with young pine. At a distance from three to four miles from the river is the country known as piny woods, from which could be obtained a large supply of first-class pine lumber.

As shown by plan, the first tributary of any importance is East River, which runs for about twenty miles in the country and again joins the river. This stream traverses a good lumber district, partly settled. It is sometimes used by the barges in ascending, in preference to the main river, on account of the current not being so swift. The next tributary is Cypress Creek, which is suitable for rafting lumber for a distance of ten miles, of which there is a large supply. The next tributary is Holmes Creek, a stream of considerable importance, and navigable for fifty miles to Vernon, the county-seat of Washington County, running through a good timber district, partly settled, and from which are exported lumber, cotton, sugar-cane, &c.

There are several small tributaries, as shown by plan, traversing good timber-land, from which lumber can be readily obtained.

Up to this point, one hundred miles from the bay, there are very few settlements, and not much land near the river under cultivation. Passing upward, the banks of the river materially change, becoming higher and covered on each side with pine timber.

At a distance of one hundred and twenty miles up the river is situated Cerro Gordo, better known by the name of Hewitt's Bluff. It is the county-seat of Holmes County, and contains about twenty-five inhabitants, two stores, and two dwelling-houses. It formerly had a court-house, jail, clerk's office, &c., but about twelve months ago they were burned down, and the court is now held in the open woods.

About one hundred and sixty miles from the mouth of the river, we arrive at Geneva, in the State of Alabama, the present head of navigation. At this point the Pea River enters the Choctawhatchee River. This stream runs in a northerly direction for about one hundred miles, through the counties of Geneva, Coffee, Dale, Pike, and Barbour, and

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traverses one of the best timber districts of the State, from which at present nearly all the lumber descending the river is obtained.

From this point the Choctawhatchee River runs in a northeasterly direction for about sixty miles, passing through the counties of Geneva, Dale, and Henry.

Thirty miles above Geneva, on the Choctawhatchee River, is situated the town of Newton, in the county of Dale, at which place a company has lately been formed with a view to the improvement of the river between the two places.

The town of Geneva was originally situated on the banks of the river, and was a place of considerable importance, containing about 500 inhabitants; but during the year 1861 it was destroyed by a freshet, leaving only three houses of the original number standing. The present town is situated in the forks formed by the Choctawhatchee and Pea Rivers, about three-fourths of a mile from their junction, in the county of Geneva, and is about one hundred miles southeast of Montgomery, and about sixty miles distant from the nearest railway station. It shows signs of considerable vigor and enterprise, contains about two hundred and fifty inhabitants, six stores, court-house, church, post-office, hotel, &c., nearly all of which have been erected during the last twelve months. Previous to the year 1861, a large tract of country, embracing the counties of Dale, Geneva, Coffee, Barbour, and Henry, in the State of Alabama, and Washington, Walton, and Holmes Counties, in the State of Florida, depended on the river as the only outlet by which their produce could reach the market, but, since the completion of the Mobile and Montgomery Railroad, a large portion of this country, in the State of Alabama, has, by this means, found another outlet for its trade; but should the navigation on the river be improved, owing to the cheapness of water-carriage over rail, I have no doubt that a large portion of this produce, especially cotton, would again use the river as a means of transportation to market.

Owing to the scarcity of railroad facilities in the State of Florida the counties in this State, mentioned above, are still entirely dependent upon the river as a means of transportation. The following tables will show their area, resources, &c.

State of Florida.

Date.	Counties.	Area, square miles.	Population.	Taxable wealth.	Acres under cultivation.	Resources.
1870	Washington	1,100	2,302	$279,634	5,563	Lumber, cotton, sugar-cane, produce, &c.
1870	Walton	1,480	3,041	243,611	2,117	
1870	Holmes	720	1,572	157,201	1,050	
	Total	3,300	6,915	680,446	8,730	

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State of Alabama.

Date.	Counties.	Areas, square miles.	Population.	Taxable wealth.	Acres under cultivation.	Resources.
1870	Dale		11,239	$757,600	57,729	Lumber, cotton, sugar-cane produce, &c.
1870	Geneva		2,951	139,602	23,514	
1870	Coffee		6,176	293,569	180,076	
1870	Barbour		29,311	2,392,655	39,845	
1870	Pike		17,423	1,139,181	282,692	
1870	Henry		14,160	942,665	240,939	
	Total		81,260	5,658,272	1,189,995	

Of the resources mentioned above, the lumber is of the greatest value and importance. From information collected from merchants and others engaged in the lumber trade, and from testimony given in the United States courts respecting land-claims, we find that the lowest estimate given is that lumber can be profitably hauled a distance of three and a half miles, and the lowest average per acre throughout the entire water-frontage is five trees per acre, which, when squared and delivered at the mouth of the river, have a value of nine dollars for each piece of timber. I estimate the water-frontage of the Choctawhatchee River and its tributaries, calculating both sides of the river, to be, at the lowest estimate, five hundred miles, which would give the following figures:

Length of water-frontage	500
Distance profitable to haul	3½
Number of square miles	1,750
Number of acres per square mile	640
Number of acres available	1,120,000
Trees per acre	5
Trees available	5,600,000
Value of each tree available when delivered at the mouth of the river	$9
Total value of trees	$50,400,000

NOTE.—By one of the largest firms now engaged in obtaining lumber from the river this average is made considerably larger, calculating that it is profitable to haul a distance of five miles, and placing the average number of trees at ten per acre. This would give the following figures:

Length of water-frontage	50
Distance profitable to haul	
Number of square miles	2,50
Number of acres per square mile	64

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Number of acres available	1,600,000
Trees per acre	10
Trees available	16,000,000
Value delivered mouth of the river	$9
Total value of trees	$144,000,000

Taking a mean average of the two, which, I think, will form a fair estimate, the total value of timber available would be $97,200,000.

From careful inquiries, I find that the following statistics will show the amount of business done on the river during the past year:

	Value.
Cotton, 600 bales, at $80 per bale	$48,000 00
Lumber, 14,000 logs, at $9 per log	126,000 00
Produce descending the river, including corn, sugar-cane, &c	20,000 00
Value of merchandise ascending the river, estimated at 30 barge-loads, at the value of $3,000 per barge	90,000 00
Total	284,000 00

The following table of observations of the thermometer shows the highest and lowest temperature each day during the following dates:

Number.	Date.	Day of week.	Highest.	Lowest.	Number.	Date.	Day of week.	Highest.	Lowest.
	1871.		Deg.	Deg.		1871.		Deg.	Deg.
1	Nov. 20	Monday	56	35	16	Dec. 5	Tuesday	68	28
2	Nov. 21	Tuesday	56	38	17	Dec. 6	Wednesday	76	24
3	Nov. 22	Wednesday	54	36	18	Dec. 7	Thursday	94	44
4	Nov. 23	Thursday	56	36	19	Dec. 8	Friday	84	46
5	Nov. 24	Friday	60	45	20	Dec. 9	Saturday	95	46
6	Nov. 25	Saturday	70	60	21	Dec. 10	Sunday	75	50
7	Nov. 26	Sunday	82	70	22	Dec. 11	Monday	85	31
8	Nov. 27	Monday	80	72	23	Dec. 12	Tuesday	76	31
9	Nov. 28	Tuesday	82	68	24	Dec. 13	Wednesday	96	49
10	Nov. 29	Wednesday	70	56	25	Dec. 14	Thursday	46	41
11	Nov. 30	Thursday	70	40	26	Dec. 15	Friday	48	41
12	Dec. 1	Friday	58	40	27	Dec. 16	Saturday	76	28
13	Dec. 2	Saturday	56	40	28	Dec. 17	Sunday	76	48
14	Dec. 3	Sunday	68	60	29	Dec. 18	Monday	78	46
15	Dec. 4	Monday	68	38	30	Dec. 19	Tuesday	80	46

From the above table it will be seen that the thermometer was the highest on the 13th of December, being ninety-six degrees; the lowest on December 6th, being twenty-four degrees, or eight degrees below freezing-point; and that the greatest variation in temperature in one day was on the latter date, being a variation of fifty-four degrees.

Carefully reviewing the information obtained, I find that this is comparatively a new country, and what is bringing it into importance is the valuable timber-land through which the river runs.

Pensacola, one of the largest lumber exporting ports on the southern coast, is greatly interested in the improvement of the Choctawhatchee River, for the reason that the lumber on the banks of the Escambia River, from which it has hitherto drawn its largest supplies, is becoming exhausted, and on account of the long land carriage and its consequent increase of expense, is now causing the merchants of that city to turn their attention to the almost inexhaustible and comparatively cheap timber regions of the Choctawhatchee.

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The shipments from this river during the past year are only the commencement of a business that will no doubt be, at no distant date, of very great importance, and which would be greatly facilitated provided that proper improvements were made, so as to allow this lumber to be rafted down the river with less expense, difficulty, and danger.

I also find that one of the greatest obstacles to the commercial improvement of the river is the large area of land on its banks reserved for naval purposes by the General Government; which land, as I have already mentioned, is pronounced unfit for the purpose for which it is held. On account of this reservation, not even a site for a depot for the transshipment of goods, brought by sailing-vessels, can be obtained at its mouth, compelling the reshipment of all goods intended for the river at the village of Freeport; thus causing sixteen miles of extra traveling, both difficult and dangerous for barges built for boating on the river. As this is of great importance to merchants and others interested in the trade of the river, I would respectfully recommend that this subject should be inquired into by the proper authorities, and that the land, of no value for the purpose for which it is held, be thrown upon the market and sold to private parties.

The result of our examination of the Choctawhatchee River, from its mouth to Geneva, the present head of navigation, a distance of about one hundred and sixty miles, shows that there is available, at all times within this distance, at least eight feet of water, three feet more than can be carried through the Narrows at the east end of Santa Rosa Sound, before referred to, and that the obstructions consist principally of snags, sawyers, overhanging trees, wrecks of steamboats. Another source of difficulty arises from the, in some instances, very tortuous direction of the channel. The improvements therefore proposed are the removal of the obstructions above specified and the straightening of the channel.

I submit three estimates for those improvements, depending upon the thoroughness with which they shall be executed.

Estimates of cost of removing the obstructions to navigation in the Choctawhatchee River, from Geneva, Alabama, to the point where the same empties into Choctawhatchee Bay, Florida.

FIRST ESTIMATE.

To 2 snag-boats, tackle, and appurtenances complete, at $3,000	$6,000 00
To steam tow-boat and flat-boats attending the same, including expense of working snag-boats 6 months, at $5,000 per month	30,000 00
To cutting and removing overhanging trees on the banks of the river, 60 men, 6 months, at $45 per man per month	16,200 00
To 2 foremen, at $100 each per month, 6 months	1,200 00
To subsistence for 62 men 6 months, at $12 each per month	4,464 00
To removing wrecks of steamers Boston and 8th of January	2,000 00
To dredging, excavating 40,000 cubic yards, at 50 cents	20,000 00
To excavating 800 cubic yards solid rock, at $3	2,400 00
	82,264 00
To engineering and contingencies, 20 per cent.	16,452 80
Amount	98,716 80

SECOND ESTIMATE.

To 1 snag-boat, tackle and appurtenances complete, at $3,000	$3,000 00
To working the same, including expense of attending tug-boat and flat-boat 8 months, at $3,000 per month	24,000 00
To cutting and removing overhanging trees from banks of river, 30 men 8 months, at $45 per month per man	10,800 00
To 1 foreman 8 months, at $100	800 00

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To subsistence for 31 men 8 months, at $12 per month each	$2,976 00
To removing wrecks of steamers Boston and 8th of January	2,000 00
	43,576 00
To engineering and contingencies, 20 per cent.	8,715 20
Amount	52,281 20

THIRD ESTIMATE.

To 1 snag-boat, tackle and appurtenances complete	$2,500 00
To working same, including expense of attending tug and flat-boat 5 months, at $3,000 per month	15,000 00
To removing overhanging trees from river-banks, 30 men 5 months, at $45 per month per man	6,750 00
To 1 superintendent 5 months, at $100 per month	500 00
To subsisting 31 men 5 months, at $12 per month per man	1,860 00
To removing wrecks of steamers Boston and 8th of January	2.000 00
	28,610 00
To engineering and contingencies, 20 per cent.	5,722 00
Amount	34,332 00

The first of these estimates contemplates a thorough and complete improvement of the river, but the present commerce of the river is not of sufficient importance to warrant me in recommending to you to ask the General Government to expend so large an amount of money.

The second estimate contemplates not so exhaustive an improvement, but which, if applied, would be sufficient to meet all requirements of the present and prospective trade for many years to come. I leave to your greater experience to say if from the figures, data, and statistics which I have furnished, you could consider the river of sufficient commercial importance to recommend the Government to appropriate the amount required.

The third estimate is for the removal of obstructions which make the navigation of the river both difficult and dangerous, even for the amount of trade done on it at the present time. The amount called for by the estimate is about 10 per cent. of the value of the merchandise carried on the river during the past year, and I estimate the improvement would be sufficient for all purposes for at least five years to come. This would reduce the percentage on value of goods carried during the time to 2 per cent., which would only be a moderate rate of insurance, and would also naturally tend to the increase of business, especially that which is looked forward to in that district with so much interest—the development of the lumber trade. It is only reasonable to suppose that this increase alone will be many times greater than the amount necessary to pay for the required improvements. I would therefore respectfully recommend that this amount should be expended at as early a date as possible for the present improvement of the river.

In conclusion I would state that my information has been obtained from the most reliable sources, and may be considered correct.

I have also to thank the merchants and others upon the river for their courtesies and hospitality extended toward myself and assistant, and for the facilities afforded us in obtaining our information respecting the commerce of the river.

Respectfully submitted.

JOSEPH BURNEY,
Assistant Engineer in charge of the Examination and Survey of the Choctawhatchee River.

Brevet Brigadier General J. H. SIMPSON,
Colonel of Engineers, United States Army, Mobile, Alabama.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a resolution of the Senate of the 1st instant, a report of the board of engineers, relative to the improvement of Mobile Harbor.

APRIL 19, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *April* 18, 1872.

The Secretary of War has the honor to send to the United States Senate copy of a report of Colonel J. H. Simpson, of the Corps of Engineers, dated Mobile, March 22, 1872, relative to the improvement of Mobile Harbor, and also a copy of the report of a board of engineers, dated February 14, 1872, upon the same subject, which were called for by Senate resolution of the 1st instant.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 17, 1872.

SIR: In compliance with the following resolution of the Senate of the United States of April 1, 1872, viz: "That the Secretary of War be requested to furnish the Senate with a copy of the communication of General J. H. Simpson, of the Engineer Corps, United States Army, of date Mobile, March 22, 1872, relative to the improvement of the Mobile Harbor; also, a copy of the report of a board of engineers, of date February 14, 1872, relating to the same subject, and any other information in his possession in relation to the subject," I beg leave to transmit herewith copies of the reports referred to, viz, report of the board of engineers on the improvement of Mobile Harbor, dated February 14, 1872, and report of Colonel J. H. Simpson on same subject, dated March 23, 1872.

The report of the board of engineers, dated February 14, 1872, has been printed by the House of Representatives, Ex. Doc. 215, Forty-second Congress, second session.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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MOBILE, ALABAMA, *February* 14, 1872.

GENERAL: The board of engineers constituted by the following order:

[Special Orders No. 4.—Extract.]

HEADQUARTERS CORPS OF ENGINEERS,
Washington, D. C., January 6, 1872.

I. A board of engineers, to consist of Colonel J. H. Simpson, Corps of Engineers; Lieutenant Colonel Z. B. Tower, Corps of Engineers; Lieutenant Colonel H. G. Wright, Corps of Engineers, will convene in Mobile, Alabama, on January 20, or as soon thereafter as practicable, to prepare a plan for the improvement of the harbor of Mobile. In connection therewith the board will examine the projects of the "board for the improvement of the river, harbor, and bay of Mobile, organized under authority of the State of Alabama," and report their views as to the probable effect of the works projected by that board upon the operations now being carried on by the United States for the improvement of Mobile Harbor, and upon those proposed by the plan they may submit for its improvement, and what modifications, if any, should be made in the projects of the State board.

Captain A. N. Damrell, Corps of Engineers, will act as recorder of the board.

* * * * * * *

By command of Brigadier General A. A. Humphreys:

JNO. G. PARKE,
Major of Engineers.

met at the city of Mobile, February 3, instant, the earliest day practicable, all the members, with the recorder, being present. They continued their sessions from day to day, examining maps of the river and bay of Mobile, and projected plans for their improvement, and such reports of boards and of officers of the Corps of Engineers as were at hand, visiting the localities of interest connected with the projected plans of improvement, viz: The inner harbor of Mobile, Choctaw Pass and Bar, the lines of channel obstructions, and Dog River Bar as far as the anchorage of the upper fleet, causing soundings to be made and specimens of the bottom to be procured whenever thought necessary; and further seeking information from other sources as to the condition of the bars and the depth of the water thereon, as well as in the channels, for the past forty years. On application to the "board of improvement of the river, harbor, and bay of Mobile, organized under authority of the State of Alabama," they were courteously furnished with their projected plans of improvement, with explanations of the same, both verbal and in writing, by their engineer, General Braxton Bragg; and they now have the honor to submit the following report, as required by the foregoing order of the Chief of Engineers, giving their views as to the method of improvement of the channels of approach to the city of Mobile and as to the probable effect of the works projected by the "board of improvement of the river, harbor, and bay of Mobile" upon the operations now in progress and upon those still necessary to open the channel-way, as proposed by the General Government.

REPORT.

The inner harbor of Mobile is properly the anchorage in the Mobile River, extending northward from its mouth at Choctaw Bar. This river opens into the bay of Mobile, which extends a distance of about thirty miles to the south to Dauphin Island and Mobile Point. This bay or basin is, for the greater part, shoal; and it is this shoalness to so great an extent southward from the mouth of Mobile River that constitutes the difficulty in the way of obtaining and preserving the requisite depth of water on the line of approach to the city from the anchorage below.

At this date 21 feet depth at mean low water is maintained on the

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outer bar and in the "lowerfleet" roadstead, about twenty-five miles from Mobile, while 13-foot draught can ascend the bay to the "upper fleet," opposite Dog River, about nine miles distant from the mouth of Mobile River. The water shoals gradually from this 13-foot curve to Dog River Bar, where its least depth in the channel, three miles distant from Choctaw Bar, is but 9 feet, deepening again above to 10 feet till the lower line of obstructions is reached. From this point to the upper obstructions the direct channel and that of Spanish River show a least depth of 12 feet, the latter river, however, having a greater depth through the larger portion of its length, while the former shoaled at Choctaw Bar to 7½ feet at mean low water before the excavations now in progress were commenced. The want of hydrographic charts of Mobile Bay (none prior to 1852 being before this board) prevents us from ascertaining the earlier condition of the channels of approach to the city and of the exterior bars further than can be derived from the testimony of Captain John Grant, a well-known and intelligent citizen of this place, of large personal experience, having been engaged on works of harbor and channel improvements for the past forty-five years, and residing in this vicinity for the greater part of that period. By his testimony the outer or Dog River Bar does not vary essentially, having maintained from 8 to 9 feet depth of water over its shoalest part since his arrival at this place in 1826, while Choctaw Bar gradually shoals from year to year, but very slowly. The greatest depth of water on this bar being but 5½ feet in 1828–'29, it was then dredged to give a channel-way of 8 feet at mean low tide, which was again deepened by the same process in 1838–'39 to 10 feet; but having been left without further care for a period of twenty-one years, was found, in 1870, to have but 7½ feet depth. Southerly and southeast winds, it is believed, create a wash in Garrow's Bend that moves the sands of that shore around Choctaw Point, causing the shoaling of the waters southeasterly from that point and on Choctaw Bar, and gradually filling Choctaw Pass. Some forty samples of the bottom soil were procured from the pass and bar, and from various portions on the shoals to the west, and from Garrow's Bend, which seemed to confirm the opinion that the shoaling process, both in the pass and on the bar, is due, at least in part, to the accumulations drifted from the bend, and that jettees might be advantageously placed along that shore to prevent this drift. The river, doubtless, deposits some of its silt, as the waters at its mouth widen; but if the sand-drift from the bend can be effectually checked, the shoaling process on the bar will probably be much less rapid than at present. Our opinion, in this respect, differs from that of the board of 1860.

Having thus briefly described the channel of approach from the anchorage of the bay to the inner harbor of Mobile, and the two obstructing bars to this passage, and pointed out (what is apparent from an examination of the chart of Mobile Bay) that the difficulty in the way of its improvement arises from its being merged or lost in the waters of a wide shoal bay extending southward about twenty-five miles before gaining a depth of 18 feet, this board are compelled to admit that the problem before them does not promise an easy or entirely satisfactory solution, or, at least, one that will give, in a strict sense, a permanent improvement.

Such a channel or passage-way can only be deepened by the scouring-process, or by dredging, or by both combined. The first would require that the river currents, to effect this end, should be confined within narrow limits by dikes or jettees, which, carried so far into the bay, would be very costly, and if made with timber, the only material avail-

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able within reasonable limits of expenditure, would decay above the low-water line, and in its southern portion would be rapidly destroyed by the sea-worm. Moreover, the river-silt, passing through this channel, would rapidly form a bar at its mouth, necessitating the prolongation of the inclosing dikes or the dredging of the bar at short intervals, either of which operations would require frequent outlays in addition to the original cost.

The board see such objections to this method of improving the channel of approach to the city of Mobile from the upper anchorage that they have not deemed it necessary to make any plans or estimates of its cost.

The other method of improving this channel by dredging will also be very costly, and it cannot be hoped that the results will be entirely permanent; in other words, that the depth attained will be preserved without additional dredging from time to time. Of the two methods, the board, however, prefer the latter, believing it the more likely to procure, if not a strictly satisfactory channel, at least a better one than can be obtained at the same cost by any other means that have been suggested. The operations necessary to dredge this channel to a suitable depth will probably involve an outlay of $630,000 in addition to that already granted and small appropriations from time to time, to preserve the depth of water attained on the completion of the work.

Admitting the above conclusion of the board, that the dredging-process is the preferable method of improving the channel of approach to the city, two projects present themselves for our consideration: the first, to dredge Choctaw Bar to a depth of 9 feet at mean low water, the present depth on Dog River Bar, which would permit the passage of vessels of 11-foot draught at high tide, and which could be effected and maintained without great cost; and the second, to dredge a suitable channel, 13 feet deep, over both bars, for a length of nine miles from the inner harbor of Mobile, giving a draught of 15 feet at high water to the upper-fleet anchorage, and during the prevalence of southerly winds foot more. The board are of opinion that the commercial interests of the city and State will justify the large expenditures as estimated to secure the deeper or 13-foot channel. The problem for solution in this bay is similar to that in Patapsco Bay, for the improvement of the channel of approach to the harbor of Baltimore. If the method by dredging is a success there, as it is believed to be, it will probably be so here, as the bay of Mobile is not more exposed to action of storm-waves than the open reach of Patapsco Bay.

As to the direction of this artificial channel, the board concur with that of 1860, and with both of the engineer officers recently in charge of the Mobile Harbor improvements, that the line of deepest water should be followed as it has existed for the past fifty years, since this line must now be regarded as a resultant of a fixed regimen of the different rivers uniting to produce this channel. The curve at the upper obstructions should be made as gentle as possible, and the opening or width of channel in that part somewhat increased, to admit the ready passage of the largest class of vessels that may enter the inner harbor of Mobile. It is recommended that this excavation be restricted to a width of 200 feet throughout its length, at least until its comparative permanency can be tested or established.

The board give it as their opinion that this excavation should be made as rapidly as possible, for if portions only are dredged, and left in an uneven or lumpy condition, such portions will fill to the level of the projections; and, besides, there will not be a clear water-way for the

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ready movement of the bottom current until each bar is cut entirely through and finished to an even surface. If, on the other hand, this dredging should proceed slowly and at intervals, it will be but a partial success. No good results can be predicted, except from a rapid and thorough execution of the work. The sketch accompanying this report shows the channel in red lines, as proposed by the engineer officer of this station, with the slight modification at the upper bend already alluded to, and now submitted by this board to the Chief of Engineers, for his consideration.

It should be here noticed that the State board of harbor improvement, under the direction of its engineer, General Braxton Bragg, have removed the upper obstructions across the channel of the Mobile River, immediately beyond the Choctaw Bar, to a width of 600 feet. The remaining portion of this obstruction westward is not thought to be prejudicial to the channel. In similar manner, the gap in the lower obstructions has been opened to a width of 600 feet. Where the channel-way of Spanish River crosses the upper obstructions the gap is now about 200 feet wide. It is apparent that the width of this channel and the great body of water—that of Spanish and Tensaw Rivers combined passing in this direction—require a wider opening through this line of obstructions—an interval of at least 600; otherwise the flow in part will crowd eastward, and not continue in its proper direction to unite with the current of Mobile River, through the outer channel over Dog River Bar. It would be well for a year or more to observe closely as to the effect of the remaining portions of these obstructions, with a view to ascertain if they are in any manner prejudicial or beneficial to the channel-way as it now exists beyond the *débouchés* of the several rivers into Mobile Bay; and further, as to the expediency of extending the upper obstructions westward to the shore at Choctaw Point.

The board having given their opinion as to the method of improvement which promises a better channel of entrance to the inner harbor of Mobile, in compliance with their instructions, will now present their views as to the probable effect of the works projected by the "board for the improvement of the river, harbor, and bay of Mobile," organized by the State of Alabama, upon the operations now in progress on the part of the United States to deepen the channel of approach to the city. These projected works are explained in accompanying paper, submitted by General Bragg to this board, marked A, in the appendix. Quoting from this manuscript, the first of these projected works now in process of construction is "a structure of piles and filling across the head of Pinto or Middle Pass, intended to close the same and force the water now flowing through that pass into the main channel by Choctaw Point." There will be some increase to the volume of water flowing out of the mouth of Mobile River by shutting up this pass, producing, probably, some scouring effects below on the river banks or bottom, the heavier or sandy portions of which, if this increased flow of water be rapid enough to move sand, will be redeposited as soon as the slack-water will permit, while the finer portions will be carried farther out into the bay, and mostly dispersed in its shallow waters on Dog River Bar and beyond. And here it may be well to observe that any scouring-process that moves material from the banks or bottom of a river near its mouth only transfers it into the bay or sea beyond, to form a bar there, if the water be shoal. Any large increase in the flow of Mobile River will probably move Choctaw Bar farther toward the bay, and result in injury to the works now in progress. This bar is nearly all sand, and no current in the upper part of the bay is rapid enough to disperse it. The

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aim of all works of improvement at this locality should be to avoid such operations as lead to the movement of sand to the mouth of the river. In fact, the deepening of Mobile River by the scouring-process seems incompatible with the preservation of the channel through Choctaw Bar, as now in progress of execution. It is questionable, however, if this dike will create any such serious disturbance in the river; and this board do not, therefore, make a point of objecting to its construction any further than noticing its possible detriment to the excavations on the bar below. If these excavations had not been commenced, the board would not have thought it necessary to have presented any remarks as to the closing of Pinto Pass.

2d. "A similar work along and in prolongation of Pinto Island at its southern end, to 6 feet of water, intended to close the opening through that marshy bank, keep the water concentrated in the channel, and prevent a constant washing by southeast winds upon the lower city front, and by which it is believed much sedimentary matter is driven into the stream and carried down to be redeposited on reaching slack-water." No objection is made by the board to this construction.

3d. "A similar work just below the swamp at Choctaw Point, to check the abrasion long continued on that part of the city front, and incidentally to intercept a drift, believed to aid in the formation of Choctaw Bar. Originally projected to a length of 4,000 feet, this work is now restricted to 1,500, at the shore end." This jettee is now being constructed, and two other short jettees are also to be constructed under same authority, to the westward of the present jettee, if found advisable. The board are of the opinion that the jettee now being constructed will prove beneficial in preventing sand from being drifted along by the shore current upon Choctaw Bar and Pass. They would, however, have recommended the construction of the several short jettees, beginning at a point farther to the westward on this shore, to accomplish the same purpose, if the present jettee had not been commenced by General Bragg.

4th. "The removal of two large wrecks opposite the city, which not only impede navigation, but serve to accumulate deposits and cause the formation of bars." These sunken vessels disturb the regimen of the river, and their removal must be beneficial to the preservation of its normal condition, as well as to freedom of movement of shipping in this inner harbor. The manuscript continues as follows:

These include all the works now in progress under this board. At the time they were projected, it was also contemplated to remove a heavy structure on the west side of Pinto Island, including large deposits above and below it, which had narrowed the channel to the serious injury of navigation and tended to force the water through Pinto Pass. This was deemed the more necessary as a serious encroachment has been made on the opposite side of the river, by the construction of a railroad wharf far into the stream. This work was abandoned in defereuce to opposing views from those engaged in the removal of Choctaw Bar.

The removal of the heavy structure, which seems to be a line of piles serving as a boom for logs, would probably be beneficial as preventing sedimentary deposits along the west shore of Pinto Island. The objection urged by General Simpson, as stated by him to this board, was made as to the manner of removing the "large deposits above and below" the pile structure, or boom, including a large portion of Pinto Island, it being understood by him that the removal in question was to be done by excavation, so far only as it was necessary to effect the purpose, and the rest by the scouring-process, which would carry large quantities of silt, sand, roots, logs, &c., into the channel then in process of excavation through the bar below. Excavation on the Pinto Island

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side of the channel, to increase its width and depth, made by dredging, would not interfere with the present operations on the part of the United States. And the board would here give their opinion that the deepening of the water about the wharves or slips of the city front, or in shoal places of the channel, or on the opposite shores, ought to be done by dredging, and not by constructions that induce scouring at these points, as the material thus washed away by currents must be transported to be redeposited where the river opens into the bay.

General Bragg goes on further to state that—

Upon the completion of the above-named works, it is contemplated to reduce the width and depth of Spanish River at its head, and thus force a portion of its present current through the main stream, but not to an extent impeding its passage by any vessel which can now reach that point. It is believed these several additions to the main stream will be ample to restore to our use our greatly impaired water-front and give a depth of water thereat sufficient for all present purposes. Should this anticipation not be realized, similar work may be necessary at the head of Tensaw.

This proposition to shut up the head of Spanish River, leaving only a passage for vessels, if effectual in largely increasing the flow of water in Mobile River, may, and probably will, scour away sedimentary deposits along the wharf-front, or increase the depth of water of the river, washing the bottom to a greater depth than is needed, for it is well established that a large increase in the flow of a river will seriously disturb its regimen; but precisely in what manner, it is difficult to be foreseen. At any rate, most of the material removed, whether by erosion of the banks or by scouring the bottom, will be swept down and redeposited where the widening of the waters check their velocity sufficiently to permit such deposit. It does not follow as a sequence of this increase that its efforts will be directed only to those points which require deepening. In the present case the abrasion may take place at one or many points along the Mobile River, above the city, where such disturbance cannot be otherwise than detrimental, as well as in its front. To the extent, therefore, that this partial closing of the head of Spanish River may increase the cross-section of Mobile River, whether above the city, where nothing is to be gained by widening or deepening it, or along the city-front, the wash carried below will doubtless be of serious injury to the channel proposed on the part of the General Government. Besides, so great a change in the regimen of Mobile River will doubtless produce a change in the regimen of the channel beyond Choctaw Pass, probably giving a new direction to the flow of the combined waters below that pass. It is impossible to anticipate the alterations that would result from so important a change as the throwing of the greater part of the waters of Spanish River into Mobile River. Should the head of Tensaw River, in addition to that of Spanish River, be similarly closed by obstructions reaching almost across the water-way, the disturbance of the regimen of Mobile River will be further increased and the injurious results to the works below proposed by the United States proportionally augmented. If we supposed both of these rivers closed, or nearly so, the bar at the mouth of Mobile River would probably be thrown farther southward, and the direction of this single current would doubtless be different from that which now results from the combination of the streams of Spanish and Mobile Rivers, between the two lines of obstructions. It matters little where this bar is formed, whether at Choctaw Pass or farther southward, it will probably require dredging to give passage to vessels of 13-foot draught at mean low water, and whatever may be the result of the changed regimen of Mobile River, by the greater flow of water between its banks, there still will remain the long reach of shallow water of the bay, beyond the bar southward, as far as

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the 13-foot curve, (about seven miles,) to be dredged as proposed in this report, to get the required water-way. It is to be remembered that the bar at the mouth of Mobile River, only 3,200 feet across, is but a small obstacle to the passage of vessels to the inner harbor of Mobile. Below the lower line of obstructions nearly the same amount of water flows now, viz, the combined streams of Mobile and Spanish Rivers, as would result from joining these streams at some higher point.

It would seem that General Bragg, in his arguments in favor of enlarging the water-flow of Mobile River, has lost sight of this important feature of the bay, in his anxiety to work immediate benefit to the wharf-front and anchorage of the city. For the reasons thus set forth, this board are of opinion that the partial closing of both or either of the two named rivers, as proposed by General Bragg, would effect serious detriment to the operations now in progress by the General Government and to those proposed in continuance of plans of improvement which have received the sanction of the board of 1860, of the successive engineer officers on this station since that date, and of the Chief of Engineers of the United States Army.

General Bragg's manuscript goes on further to state that—

It is also proposed to continue filling the slips between wharves along the city front, and eventually to build a solid bulkhead along the whole, as indicated on plan No. 3, cutting off such wharves as project beyond the new line and extending all others to it.

The sketch accompanying this report and the ordinance of the city of Mobile, marked B in the appendix, exhibit this new line of water-front as established by the city authorities. It seems that some of the wharves are open pile constructions, and others are solidly filled in with earth; and that in the upper part of the city the slips are more or less shoaled, so as to admit only the smaller class of vessels. The city sewers pouring sandy and other material into these slips, and the eddies formed by the wharves and by the shipping lying in these slips, are doubtless the causes of the sedimentary deposits that have rendered these wharves almost useless. To remedy this defect of construction it is proposed to eventually fill up these slips, and build a continuous bulkhead along the line established by the city ordinance above referred to, and it is expected that this change will give a sufficient depth of water along the city-front for the largest class of vessels that can enter the inner harbor.

It would seem, in this connection, that some method of sewerage might be adopted to prevent the large quantities of sand carried through the sewers from being thrown into the river, and thus eventually finding their way to the bar at its mouth. The board notice this defect of the city sewerage, not in the spirit of criticism, but rather with the desire that such cause of detriment to the improvements proposed may be avoided if possible. General Bragg, in conversation with the board, alluded to this defect in the city sewerage, for which no remedy has, as yet, been proposed. The line, as marked out between Theater and Elmira streets, encroaches quite into the river, in that part which is opposite to Pinto Island, where the harbor is narrowest. This portion of the line was doubtless determined upon while the State board of improvement intended the removal of a large part of Pinto Island by dredging and scouring. If no portion of this island is dredged away, this board are of the opinion that the line of wharf-front opposite would better be retired somewhat, perhaps following a curve, to turn the water flowing down, so that it may impinge more obliquely on the shore below, and to secure a greater width of river and harbor in this reach. South of Elmira street the proposed line is to take a direction south 10°

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east. The city ordinance cited does not give the extent of this line in the prescribed direction, but prohibits wharves being built outside the front thus limited. It is evident that the bulkhead should not be continued in that direction any farther than necessary to meet the curve of the shore, as its contour line below Elmira street ought to be preserved in order to maintain the direction of the currents as they now exist, the wharf-line thence corresponding with the shore-line.

The board have thus briefly alluded to this new wharf-front as one of the projects, not yet commenced, that might, to some extent, affect the general regimen of the river and cause some changes in the channels being excavated below. It is thought, however, that with care to avoid what seem to be defects of this plan, as above pointed out, the improvement contemplated may prove beneficial to the city, without causing disturbance to the operations on the part of the United States, from which it is hoped a great benefit will accrue to the commercial interests of the city of Mobile.

Respectfully submitted.

J. W. SIMPSON,
Colonel Engineers and Brevet Brigadier General, U. S. A.
Z. B. TOWER,
Lieutenant Colonel Engineers, Brevet Major General, U. S. A.
H. G. WRIGHT,
Lieutenant Colonel Engineers, Brevet Major General.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

APPENDIX A.

OFFICE OF THE BOARD FOR THE IMPROVEMENT OF THE RIVER, HARBOR, AND BAY OF MOBILE,
Mobile, February 9, 1872.

SIR: In compliance with a resolution of the board for the improvement of the river, harbor, and bay of Mobile, I have the honor, in response to your request of the 7th instant, to lay before you the several maps of Mobile River, prepared in this office, including—

1. The bifurcation of the river at the head of Tensaw.
2. The same at the head of Spanish River.
3. The city-front and bifurcation of the river at Pinto or Middle Pass.
4. The bay shore from Choctaw Point to the southern limits of the city.

The only works now in progress under the direction of this board will be found located in pencil on these maps.

1. A structure of piles and filling across the head of Pinto or Middle Pass, intended to close the same and force the water now flowing through that pass into the main channel by Choctaw Point.

2. A similar work along and in prolongation of Pinto Island, at its southern end, to 6 feet water, intended to close the openings through that marshy bank, keep the water concentrated in the channel, and prevent a constant washing by southeast winds upon the lower city-front, and by which it is believed much sedimentary matter is driven into the stream and carried down to be redeposited on reaching slack-water.

3. A similar work just below the swamp at Choctaw Point, to check the abrasion long continued on that part of the city-front, and, incidentally, to intercept a drift believed to aid in the formation of Choctaw Bar. Originally projected to a length of 4,000 feet, this work is now restricted to 1,500 feet at the shore end.

4. The removal of two large wrecks opposite the city, which not only impede navigation, but serve to accumulate deposits and cause the formation of bars.

These include all the works now in progress under this board. At the time they were projected, it was also contemplated to remove a heavy structure on the west side of Pinto Island, including large deposits above and below it, which had narrowed the channel to the serious injury of navigation, and tended to force the water through Pinto Pass. This was deemed the more necessary as a serious encroachment had been

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made on the opposite side of the river by the construction of a railroad wharf far into the stream. This work was abandoned in deference to opposing views from those engaged in the removal of Choctaw Bar.

Upon the completion of the above-named works, it is contemplated to reduce the width and depth of Spanish River at its head, and thus force a portion of its present current through the main stream, but not to an extent impeding its passage by any vessel which can now reach that point. It is believed these several additions to the main stream will be ample to restore to use our greatly impaired wharf-front, and give a depth of water thereat sufficient for all present purposes. Should this anticipation not be realized, similar work may be necessary at the head of Tensaw.

It is also proposed to continue filling the slips between wharves along the city-front, and eventually to build a solid bulkhead along the whole, as indicated on plan No. 3, cutting off such wharves as project beyond the new line (red) and extending all others to it.

Two other small jettees below Choctaw Point are contem plated, dependent, however, on the effect produced by the first, now under construction.

The board has not adopted nor even entered upon the discussion of any general plan of work in the bay, deeming it best to await the result of present operations by the General Government.

Copies of reports made by the engineer to this board are herewith inclosed, and it will afford him pleasure to comply with any request for further information or explanation on the points above indicated, or to aid personally in any manner to further the general objects we must all have in view.

I am, sir, very respectfully, your obedient servant,

BRAXTON BRAGG,
Engineer to the Board.

General J. H. SIMPSON,
United States Engineers, President of Board, &c., Mobile.

OFFICE OF BOARD FOR IMPROVEMENT OF
RIVER, HARBOR, AND BAY OF MOBILE,
Mobile, January 2, 1872.

To the president and members of the board for the improvement of the river, harbor, and bay of Mobile:

GENTLEMEN: At the close of the year it seems proper that a statement of the progress made since your organization in February last in prosecuting the important work confided to you by the State shall be submitted and that a general outline of what is proposed for the future be placed upon your record.

All legal impediments having been removed, the board was organized for business on February 27, 1871, and conferred upon me the appointment of engineer, which was promptly accepted. The United States Government, with an appropriation of $50,000, was then engaged, under a contract with Captain John Grant, commencing in September, 1870, in dredging a channel through Choctaw Bar.

Preliminary to any action, and with a view to harmonize the work of this board, as far as practicable, with that of the Federal Government, the engineer in charge of the latter was requested to inform me of the plan on which he was operating and the progress he had made in its execution. He promptly replied, furnishing a copy of his report of the 26th December, 1870, in which he details the plan proposed by a board of engineers in February, 1860, for deepening the channel through Choctaw Pass Bar and Dog River Bar by dredging, to which he gave his indorsement and approval. In addition to this, he proposed the removal, in part, of two lines of obstructions placed across the channel between these two bars after the date of the visit and report of that board.

The estimated cost of the work necessary to test this plan, viz, dredging a channel 13 feet deep and 200 feet wide, including $45,000 for removing the obstructions, was $774,315.52. If successful, more than 50 per cent. additional would be necessary to complete the work. (See General Simpson's report, December 26, 1870.)

Expressing his satisfaction at your desire to harmonize and co-operate with him in accomplishing the end in view, the United States engineer suggested a division of this work on which he was engaged and requested that you undertake the removal of—1st, the upper line of obstructions; 2d, the lower line of obstructions; and, 3d, to excavate the Dog River Bar channel, 2.

At my suggestion you promptly authorized me to enter on the first two items of this work, and responsible parties were soon actively engaged under contracts with this office, which were faithfully executed, and the results, entirely satisfactory, were made known to the United States engineer.

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My attention was early called by prominent citizens and business men of the city, including some members of your board, to the condition of the city-front and of the river, above any work projected by the United States Government. Important changes had taken place since the visit of the engineer board, in 1860, and others were in progress, which, if not checked, would result, it was feared, in a final diversion of the river from the entire city-front. Such information as could be obtained from old citizens, from pilots, and from old city maps, aided by a cursory examination, satisfied me that their apprehensions were not unfounded. It was discovered that wharf-owners and other property-holders on the river bank along the whole city-front had been permitted, in contravention of authority, to build into the river beyond the former deep-water line, which was about where Water street now runs, until the channel or water-way had been permanently contracted at least 600 feet, and that the same kind of work was still progressing at an alarming rate. Had there been no other mouth to the river, or outlet for the water, an erosion of the other bank, if not similarly protected, or a deepening of the channel, would have been the necessary result. Two other natural outlets, Spanish River and Middle or Pinto Pass, however, presented an easier solution, and, by them, the water driven from the city front was conveyed to the bay. The depth of water at many of the wharves was found to have decreased so as to render them useless even for the larger class of boats engaged in river navigation. Here was a condition of affairs the continuance of which rendered large expenditures in the lower bay but a prodigal waste of means, for no result could be made available.

Before forming more than a general conclusion on so important a subject, involving a heavy expenditure, I applied for and obtained your consent to make a careful instrumental survey of the river from Choctaw Point to the head of the Tensaw. For this purpose instruments had to be procured and assistants employed. Some time during the progress of the work, about the 1st May last, the United States engineer in charge here, with whom the foregoing correspondence and understanding were had, left on "leave of absence."

During this same period proper steps were taken to secure the use of necessary dredging-machinery, to be applied at such time as your means might allow and your judgment direct. Before I was made aware of the completion of the surveys which were promised me, and which were necessary as a preliminary to the dredging operation on Dog River Bar, my attention was called to an advertisement asking for proposals at the United States Engineer Office for the execution of that work, a new appropriation of $50,000 having been made by Congress. As I had satisfied my mind by this time that there was a large amount of work outside of that contemplated by the plan of dredging, which was more necessary and of less doubtful effect, no objection was made to this change of programme. Indeed I was fully convinced, after a more thorough investigation of the subject, that this experiment was too costly for you, involving over $1,000,000, if it be carried out in its full extent, however advisable its partial execution might be as a temporary mitigation of the evil or as an adjunct to other and more enduring works. For these and other obvious reasons, and in the absence of the chief officer, with whom the aforementioned correspondence was had, the matter was passed over without comment from this office.

The survey of the city-front showed such serious encroachments upon the channel of the river by structures built in direct violation of law, and yet so difficult of removal, that a new line of wharf-front was deemed advisable. In the establishment of this new line a very serious difficulty was encountered. By a city ordinance, the New Orleans Railroad Company was authorized to extend its wharves and depots between Government and Theatre streets, to a line in the river varying from 60 to 100 feet beyond the former wharf-line. This ordinance had been repealed by subsequent action, but the company claimed a vested right, and was rapidly progressing in the construction of their works. Located at the point where the current was deflected into Middle or Pinto Pass by former structures, this work became much more serious and damaging than any which had preceded it. As soon as all the facts could be ascertained, the matter was laid before you, and a committee was appointed to confer with the railroad company. After considerable delay and much opposition from the company, a compromise was agreed on, by which the railroad yielded about two-thirds of its claim on condition that the work already done should not be removed. This was accepted by you as the best and least expensive solution of a complicated difficulty.

The new wharf-line suggested by the city engineer and myself, on the completion of this survey, was recommended by you to the city government, and promptly adopted. If adhered to, and the penalties for building over it are rigidly enforced, many of the difficulties heretofore encountered on the city-front will be permanently removed.

The investigation of this whole subject of the wharf-front developed facts well worth the attention of our city fathers and property-holders. These encroachments now fill with solid structures one-third of the original river-channel, and the water has been driven therefrom into the eastern outlets. Owing to the existence of these lateral outlets, the depth of water in the remaining two-thirds of the main river, instead of having been deepened by the process of scouring, has, in reality, shoaled to an alarming extent.

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An inspection of the soundings along the old wharf-line for two-thirds of its extent shows a depth varying from 5 to 9 feet only, *insufficient to accommodate the class of vessels now reaching our almost deserted port.* It is but a short sighted policy on the part of property-holders which slightly increases the area by destroying the value of the whole. But the great surprise is that this process should have continued without objection under the eyes of those employed to prevent it. Their attention seems to have been absorbed, however, to the exclusion of everything else, by a gigantic scheme of perpetually digging out a perpetually-reforming bottom to the bay.

The survey was continued to include the outlets to Tensaw, Spanish River, and Middle or Pinto Pass, with cross-sections, to show the relative capacities of each. The results were briefly stated in my report of the 25th August, 1871, as follows:

"The conclusions reached in my former report, as to the effect produced in the main channel of the river by the long-continued encroachments, have been fully confirmed by subsequent *data*, and by further study of the plans and cross-sections prepared from the surveys.

"Above the head of Spanish River, the Mobile River has an average width of fully 1,200 feet, with a cross-section of 22,250 feet, and an ample channel-way of 30 feet depth. The same distance below the head of Spanish River the width of Mobile River is found not to exceed 1,000 feet, with an average cross-section of only 13,000 feet and a channel depth of only 15 feet. Examining further, we find this loss fully accounted for by the cross-sections of Spanish River, showing 10,000 square feet and a channel-way 20 feet deep.

"Following the Mobile River down, no material change is noticed until we reach the wharves of the city, except some 1,500 square feet added from the Chickasabogue and Three-Mile Creek. From the upper to the lower limits of the city, serious encroachments have been made, as reported in my last. The tendency has been to force the water from the city-front through Pinto Pass, and this tendency has been aided by the very serious encroachments on both sides of the river below the head of Pinto Island. As the results, we find a width of only 640 feet for the main river and a cross-section of only 7,500 square feet, just one-third of the water-way found above Spanish River. The natural effect is apparent just below in the gradual growth of the marsh flats on both sides of the river near the end of Pinto Island and Choctaw Point. A continuation of these causes must soon close this channel and ruin all wharf property below Theatre street, and eventually up to Government street.*

"There is but one remedy for this unfortunate condition, produced by our own imprudence. Further encroachments must be stopped, the way must be opened, and the water must be brought back to the main channel. To open the way only would leave it to be closed again by the same process, and we should have an increasing, never-ending demand for dredging. Where the river is not obstructed above the city, nature preserves its own channel, with an ample width and depth for all purposes, and it will do so in front of the city and below it, if we will only permit it to exercise its own unerring laws.

"In addition to the work of opening and controlling the water-way of the river, I have projected and advised the construction of a jettee below Choctaw Point, to prevent the further abrasion of the western shore of the bay and drifting of the sand on to Choctaw Bar, by which the labor of dredging at that point is much increased, and the practical results, at times, greatly reduced. This work will also tend to prevent the spread of the river-water as it enters the head of the bay, and thereby aid in keeping open the channel whenever the dredging shall have been completed.

"Recalling your attention to my report on this subject, dated June 12 last, I beg to submit the accompanying plans and estimates for the work necessary to carry out the suggestions then and now made, for restoring and controlling the channel-way of the river below the head of Pinto Island and bringing back to its proper outlets so much of the water now diverted through eastern channels as may be necessary to accomplish this essential object."

The members of this board, personally cognizant of the perilous condition of the city's interests and no longer doubtful of the causes, unanimously adopted the suggestions, and ordered the execution of works deemed essential to preserve the river-front from conversion into a stagnant and pestilent cess-pool and marsh.

The removal of the obstructions and the surveys and other necessary work incident thereto had brought us to the month of September, but no time had been lost except what was due to the change of programme in the office of the United States engineer, and even that has resulted in a pecuniary saving of no small amount.

Before any contracts were let for the execution of the several works projected, I was informed that one, that of cutting away a portion of Pinto Island, to restore the natural width of the river, met with opposition in the office of the United States engineer. In the prolonged absence of the chief, with whom I could confer, the board, at my request, decided not to proceed with the execution of that work. A part of the others were contracted for on favorable terms and are now being constructed. More will be

*All above Government street has already been rendered useless for sea-going vessels.

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submitted to you as soon as the progress is such with those under contract as will justify the increased volume of water to be brought from above.

All of the work contracted for has been taken at low prices. That of removing the obstructions, for instance, was successfully completed at a cost not exceeding three-fifths of the United States estimates, and all other expenditures have been restricted to the narrowest limits. Nothing has been lost.

It is proposed for the present to continue the work of concentrating in front of the city so much of the water of Mobile River as may be necessary to give sufficient width and depth for the accommodation of sea-going vessels drawing 15 feet. There is but one way in which this can be done—forcing the water back from the eastern outlets into the main channel, from which it has been driven. It will appear strange for me to assert that large rivers give deep and small ones shallow water, yet this point has long been in dispute in regard to your river and harbor, and the result has been the expenditure of vast amounts without the slightest benefit ever having been apparent. Mobile River, above the Tensaw, and even above Spanish River, has ample width and depth for the accommodation of any vessel which can enter the lower bay. But so much water is taken off by these eastern mouths—as they may appropriately be called—that the main river, seriously obstructed below, and again divided at Middle Pass, has become almost useless and is in great danger of being lost.

But for the serious opposition which this plain proposition has recently met, I should feel that I was taxing your patience by any further discussion. A few authorities will be adduced, however, in support of so plain a truism.

D. H. Mahan, "professor of military and civil engineering, United States Military Academy," for more than forty years, and under whom all of the one hundred and fourteen officers now in the United States Engineer Corps graduated, including the two at this station, has published a valuable work on civil engineering, now used as a text-book at the Military Academy, in which, under the head of "rivers," he used the following plain language:

"If the river separates into several channels at the bar, dams should be built across all except the main channel, so that, by throwing the whole of the water into it, the effects of the current may be greater upon the bed."

The city of Saint Louis, some twenty years ago, was threatened with the same disaster to her front which has now befallen Mobile. By imprudently obstructing the river, the water was driven through an eastern channel on the Illinois side. I have been unable to procure an official account of the work which was done by the United States Engineer Department to counteract this, but the following, from a report in the New Orleans Academy of Sciences, dated 1868, answers every purpose:

"The plan of jettees has never been thoroughly tested at the mouth of the Mississippi, but the facility with which its currents may be controlled was illustrated in 1850, in the upper portion of the river, opposite Saint Louis, where a bar was found forming below, and extending upward in front of the city, throwing the channel on the east side of Bloody Island and threatening to leave Saint Louis inland.* A dam of loose stones was constructed diagonally from Bloody Island to the Illinois shore, three-quarters of a mile in length, 50 feet at the base, diminishing to 30 feet, which was found effectual, turning the current into its former channel on the west side of the river and removing the island (Duncan's) which had already formed, together with its accumulated trees, and rendered the lower landing at Saint Louis accessible to the steamboats which have formerly been driven from there by this accumulation." This work was done on no less authority than Captain R. E. Lee, United States Engineers, who was also a pupil of the venerable and eminent Professor D. H. Mahan.

In the year 1837 the city of Charleston was found in precisely a similar condition. A low marshy flat in front of the city, called Hog Island, had a channel to the east of it, through which the water of the river, obstructed, as with us, was being driven. The United States engineer officer ordered to survey and report on the subject recommended the closing of this channel. The Chief of the United States Engineers, General J. G. Totten, approved this recommendation, and in his annual report, dated Washington, November 10, 1846, says, under the head of "roads and harbors," closing Hog Island Channel, Charleston Harbor, South Carolina:

"In 1839 this Department recommended the closing of this channel as a means likely to prevent further accumulation of mud in front of part of the city of Charleston, and, indeed, not unlikely to cause the removal of much already deposited." * * * "I recommend that for this purpose there be made an appropriation for the fiscal year ending June 30, 1848, of $50,000."

A similar case has long existed in the Ohio River, at Marietta, where the stream is divided into two channels by an intervening island. It has been generally acknowledged that one should be closed, so as to force all the water through the other.

In his official report, dated October 21, 1870, Major W. E. Merrill, a distinguished officer of the United States Engineers, remarks:

*Just what is now in progress in front of this city, with the difference that our danger is double, having two eastern outlets, Spanish River and Middle or Pinto Pass.

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"At present the Ohio River at Marietta is bad in both channels at low water, and the bars in the two channels are about the worst in this portion of the river." * * *
"It is generally conceded that when the Ohio River is nearly equally divided between two channels, neither is good in low water, and in such cases it is usual to close one of the channels and to turn the entire body of water into the other. The existence of this necessity at Marietta Island has long been recognized, but there are two opposing parties in interest who have hitherto prevented any action in the case." * * *
"It is obvious that the river must be concentrated, and the parties in favor of either side can never be brought to agree."

A board of United States engineers, consisting of Majors G. K. Warren, G. Weitzel, and William E. Merrill, examined the same subject, and, under date of December 1, 1870, reported:

"The board, having visited the locality and examined the questions involved, are of the opinion that the low-water navigation requires a dam to be placed across one of the channels to increase the depth of water in the other."

The opinions of the first hydraulic engineers of Europe, concurring in these views, might be quoted, but it is deemed unnecessary to pursue the point further. It is proper to add, however, that I availed myself of the opinions and advice of that distinguished hydraulic engineer, our venerable fellow-citizen Captain Albert Stein, before arriving at the settled conclusions on which I have acted, and that nothing but the prolonged and unexpected absence of the senior United States engineer officer on this station prevented me from consulting with him. When so many authorities agree I did not see the propriety of incurring a delay of months, at a heavy expense, that his name might be added to the list. When he at last returned, a courteous invitation was extended for him to call and examine all the surveys and *data* constituting the basis of your action, which he promptly declined.

Now that the United States Engineer Department has undertaken to further test the scheme of dredging a channel through the bay and has the means to apply that test, I have deemed it best to advise you not to join with them in the joint execution of the work.

It would be exceedingly difficult, in the first place, to avoid interferences and complications, which could only do harm, and then the test proposed involves an amount of money far beyond what my judgment would approve in an experiment of such doubtful success. That it is an experiment I need only quote the distinguished chief engineer of the United States now on this station. In his report, dated the 26th of December, 1870, he recommends a large reduction of the dredging-work proposed on this line by his predecessor, and adds, "My project is to make a cut of 200 feet in width through Choctaw Bar, and one of 250 feet through Dog River Bar; depth to be made first 11 feet in both channels and eventually 13 feet. These widths will be sufficiently great to enable the Gulf steamers and harbor-tugs, with vessels in tow, to pass through the channel without difficulty, and their comparative narrowness will insure the stability of their navigable condition with much more certainty than if they were one-half wider. *At any rate, it will be much the wiser plan to await results,** with the dimensions proposed of channels, before augmenting the cost more than 50 per cent., to the probable detriment of navigation." Then follows an estimate for $737,565, to be expended in dredging-experiments.

These dredging-experiments have been so often made, and have so often failed, that I must confess to little faith in them, and shall be unwilling, at any time, to resort to them, except as adjuncts to more enduring works.

In June, 1837, the Mobile Examiner contained an advertisement, signed by Captain W. H. Chase and Lieutenant J. G. Barnard, for dredging Dog River Bar to a depth of 12 feet. They estimated the whole cost of the work then at $150,000, of which $50,000 had been appropriated. About 1852 or 1853 another $50,000 was appropriated and expended on this same work. The senior of these two officers, the captain, has gone down to the grave full of years, and the young lieutenant is now a veteran and venerable general, but their successor here still estimates for several hundred thousand dollars to continue this experiment, and in his report of 1870 says that the depth of water on that bar has *decreased* from 10 to 12 inches since these soundings in 1852, which were less than in 1837. In the same report of the successor of these distinguished engineers is found the following, in relation to dredging on Choctaw Bar:

"The directions given by the superintending engineer were to excavate one cut entirely through the bar, a distance of 2,700 feet, to a depth of 11 feet, following precisely the direction of the old channel. This through cut, averaging a width of 35 feet, was thought advisable so as to make the channel to the extent of the sweep of the dredge available as soon as possible for vessels drawing less than 11 feet. The cut, however, has been actually made to a depth of 13 feet, it having been found difficult with the dredge in use to restrict it to a less depth."

In his communication of February 25, last, this same officer says:

"Since the date of that report (26th December, 1870) the operations (dredging) have been continued on the Choctaw Bar channel, so that, *at the present time*, a cut of from

* The italics are mine.—B. B.

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60 to 70 feet has been excavated from the north end of the channel to within 250 feet of the gap in the upper obstructions at the south end of the channel, to a depth of 10½ feet at mean low water. At this point the cut is only about 20 feet wide, and as the vessels passing through are obliged to make a turn at this place, it will be necessary to widen the cut for about 150 feet in length, to a width of not less than 60 feet, in order to obtain 10½ feet of water at mean low tide through the whole length of the channel."

At this date, then, February 28, 1871, there remained less than 700 cubic yards to be removed, not a week's work, to insure a channel 10½ feet deep at mean low tide, and not less than 60 feet wide. In fact, according to the author of the above, the channel was, of necessity, 13 feet deep.

With a view to lay before you the present condition of Choctaw Bar channel, I have had it carefully sounded within the past month by competent assistants, aided by some of the best pilots in the harbor. Their soundings were made both longitudinally and across the channel at short intervals. The results show no such cut as the one referred to in these extracts. The work has doubtless been done, but it has not remained long enough to be found. In confirmation of this statement I submit the following certificate from two of the bay pilots, daily engaged in their avocation:

"MOBILE, *December* 30, 1871.

"This is to certify what water we can carry through Choctaw Pass Bar. At low water, 8 feet; high stage of water, 9½; general stage of tides, rise and fall, one foot and a half.

"JAMES LAMBERT,
"JOHN CARNEY,
"*Pilots, Dog River Bar.*"

If after an expenditure in 1837–'38 of $50,000, and in 1854 of $50,000 more, on a work estimated to cost $150,000, we find "the depth of water has decreased from 10 to 12 inches," as is now reported, we may safely conclude that the expenditure of the recent appropriations of $100,000 more will be ample to satisfy all skeptics on this long-disputed question.

In the annual report of the United States Chief Engineer for 1871, I find the results of an examination of a similar work. The project was for re-opening Roanoke Inlet, near Nag's Head, North Carolina. Several plans had been proposed by different engineers; that of Lieutenant D. C. Woodbury, United States Engineers, for dredging, was adopted. The report of this examination, dated Baltimore, 19th November, 1870, says:

"Congress appropriated $50,000 to commence operations; $40,000 have been expended, and at this time there is scarcely a trace to be seen of what has been done, the drifting sand filling in the trench as fast as it was excavated by the dredging-machine. In fact, the machine was very near being imbedded in the sand, it filling up so rapidly behind it, but was gotten out in time to save it.

"On my first visit to Nag's Head, in company with Lieutenant Whiting, of the Corps of Engineers, previously in charge of the work, I was perfectly satisfied of the entire impracticability of the scheme, and, in consequence, reported to the Bureau, recommending that the work should be abandoned and the machinery and other public property sold, which report was approved by the honorable Secretary of War, and the property was sold on 15th of August."

In continuation of this subject, the report says:

"Now, suppose a channel dredged through these last shoals, auxiliary to the re-opening of Roanoke Inlet, what would be most undoubtedly the effect after every western gale? Most assuredly, the light sands of the shoals would be lifted from their resting place and carried along until they could find a lodgment in the new-cut channel, and this operation would so invariably and frequently occur as to very rapidly efface every trace of the cut, just as was the case with the trench made by Captain Woodbury.

"7th. Again, admitting that Congress should appropriate the largest sum estimated for the project, ($53,459.66,) and the work carried on with the utmost dispatch, it is very certain every westerly gale would fill the new-cut channel to such a degree as to make it an ever-recurring necessity to dredge it over again."

This excellent report, made by General J. H. Simpson, colonel of engineers, United States Army, then recommends an abandonment of the work, as "an unwarrantable waste of the public money."

I have no hesitation in expressing the opinion that the same result has attended, and will continue to attend, all dredging through the soft alluvial deposits and light sands of the shoals in Mobile Bay, until the concentrated current of the river is brought to bear upon them.

It is proposed, then, to postpone all dredging-operations by this board until that concentration is made above Choctaw Point, and not to decide on any definite plan of work below that until the results of the concentration are seen. By that time we shall

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also have a further test of the dredging-process, as an additional boat of greater power has been placed on the work in Choctaw Bar channel.

Since the organization of your board, each of the two lines of obstructions has been opened to a width of fully 600 feet, a thorough survey of the whole city-front has been made and mapped, a new wharf-line established, and the survey has been continued to include the river and bay from the head of Tensaw to a point below the city-line on the bay-shore. Works are also in progress now to close Middle or Pinto Pass, to protect the lower end of Pinto Island from the washing of both the concentrated river and the heavy waves which break over it during high easterly winds, and to protect the lower part of the city-front from further abrasion by the same cause. As soon as these works have sufficiently progressed to justify it, others will be commenced above the city to concentrate more of the water into the main river, sweeping the city-front.

Respectfully submitted.

BRAXTON BRAGG,
Engineer.

NOTE.—Since the date of the foregoing, the "Report of the Chief of Engineers," United Sates Army, for 1871, has been received and examined with great interest. The nature and location of many of the works and the high professional standing of the officers reporting on them give great value to their views in connection with our own similar case.

Attention is specially invited to the report of Major Howell on the project for a ship-canal from New Orleans to Ship Island, dated New Orleans, February 9, 1871, (pages 524, 525, and 526,) and to another from the same officer, inclosing one from Lieutenant H. M. Adams, upon the project of a harbor at Mississippi City, and its connection with Ship Island Harbor, (pages 548, 549, and 550.)

ENGINEER OFFICE,
BOARD FOR THE IMPROVEMENT OF THE RIVER, HARBOR, AND BAY OF MOBILE,
Mobile, June 12, 1871.

To the president and members of the board, &c. :

GENTLEMEN: Herewith I have the honor to submit a map of Mobile River, from Bayou Marmoth (One-Mile Creek) to Choctaw Point, including Pinto Island and Pass, with cross-sections of that pass and the river, taken at various points. The facts developed by this survey demand the most serious consideration.

By ordinance of the city, dated 4th April, 1857, a wharf-line was established for the whole city-front, which provided "that no wharf nor other structure shall be built or constructed or extended, nor, if built, constructed, or extended, shall remain on the west side of Mobile River if it projects east beyond a line commencing at the northern line of the city, at a point from which a line running south 6° east shall strike a point in the northern line of Hunt (now Beauregard) street, extended a distance of 338 feet eastwardly from the west line of Front street; thence by a straight line to a point in the north line of Saint Anthony street, extended 252 feet eastwardly from the west line of Front street; thence by a straight line to a point on the north line of Conti street, extended 165 feet eastwardly from the west line of Front street; thence by a straight line to a point on the north line of Church street, extended 250 feet eastwardly from the west line of Commerce street; thence by a straight line to a point in the north line of Theater street, extended 195 feet eastwardly from the west line of Commerce street; thence by a straight line to a point in the north line of Main (now Palmetto) street, extended 295 feet eastwardly from the west line of Water street; thence by a straight line to a point in the north line of New York (now Elmira) street, extended 550 feet eastwardly from the west line of Water street, and thence by a line running south 20° 20′ east, to the bay." That line has been run out, and is laid down in the map now submitted. Before this line was adopted the city had encroached very seriously upon the water-way of the river, no less than 500 feet of that way along the main front having been filled and occupied by two streets and two blocks of buildings.

Had there been no other outlet for the river than this one channel, the water could have accommodated itself to the changed condition by cutting away the opposite bank or by scouring the bottom to a greater depth. Unfortunately, nature presented an easier solution in the presence of other channels; and the facts established by the survey, when compared with the past, prove beyond question that, while the water in Mobile River is decreasing, that in Pinto Pass and Spanish River is increasing. This result can be attributed to no other cause than the obstructions thus placed in the natural water-way of the river.

The city authorities then prudently established the line of 1857, beyond which no structure should extend. Defective as this line was, it was the best, probably, that

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could have been done at that time, owing to antecedent errors which could not well be corrected. But, unfortunately, enforcement did not follow enactment. Built without reference to any plan, the wharves have been constructed and extended by individuals to serve private interests and to meet temporary emergencies. Irregular in shape and length, with intervening slips, they have created eddies and stagnant pools, thus causing a deposit of the sedimentary matter brought down by the stream and of the heavy material washed in by the city drainage. As the depth of water decreased, from these causes, the wharves would be again extended, securing temporary relief at the expense of permanent injury. The slips would again be filled, and the remedy be repeated, until we are in absolute danger of forcing the main river into other channels. An examination of the map presents to you the alarming fact that nearly every important wharf north of the south side of Government street has been extended into the main river beyond the prescribed line, in some cases as much as 55 feet. Notwithstanding this, it will be perceived the slips are now so much filled by deposit that they afford no accommodation to commerce, and in the upper part of the city, even at the ends of these extended wharves, there is but 6 to 8 feet water.

To apply the proper remedy for this condition is much more difficult than to point out the errors which have produced it. Conflicting interests, private and public, must be reconciled. Sufficient space must be provided, not only for our present commerce, but for that which we seek and expect, and the water necessary to accommodate the commercial marine we invite to our port must be secured and preserved. The river has been narrowed at points to a degree which threatens us with its entire loss, and yet the land thus reclaimed has been built upon in places, especially at Government street and some distance above, until the space allotted to commerce, notwithstanding the large projection of the wharves beyond the established line, is barely sufficient.

The plan of wharves with intervening slips on a river-front, especially in a contracted stream which receives the city drainage in addition to its sedimentary matter, is never adopted except under a necessity which knows no law. This necessity could only arise from a want of space, an exposed position, or a great rise and fall in the tide. Neither of these reasons apply in our case. We have two miles of city-front already available for the uses of commerce, which can be extended to three miles at any time when business shall demand it. This is fully equal to half the space now appropriated in New Orleans, with five or six times our population and reporting ten times our commerce. In a recent elaborate report from the department of docks in the city of New York, recommending an extension and improvement of the wharves in that city, it is proposed to increase their wharf-line from twenty-eight to thirty-seven miles, which, it is argued, will be not only sufficient for the present commerce, but for the increase of an age. This extent only exceeds ours ten or fifteen fold, when her population is twenty-five and her commerce probably one-hundred-fold of ours. The want of space, then, need not deter us from prosecuting this important work, as we shall be fully able to accommodate more than ten times the present commerce. Our position is so perfectly secure from storms and our tides so insignificant that neither of the other points requires examination.

The considerations in favor of a solid quay and continuous bulkhead along the whole city-front are numerous and weighty. Such a structure would remove the many interruptions to a free and easy flow of the river-current along the whole city-front, prevent the formation of eddies, by which deposits are now made, and secure a rapid removal, by the force of the current, of the vast quantity of offensive matter which now accumulates in the slips from the drainage of the city, and not only fills them and interferes with their use, but undoubtedly proves detrimental to the public health. All other things being equal, this one consideration of a constant stream of living water, pure, wholesome, and inoffensive, in lieu of the present cess-pools of filth, nausea, and disease, should secure the adoption of the plan. As a sanitary measure alone it would more than justify the change.

The question of locating this line, now that the one of 1857 has been virtually abolished, is embarrassing. There can be no doubt that the public right of free navigation has been invaded; but vested rights are claimed under forms of law and by long usage. The expense of restoring the old line would be large, in addition to the other perplexities. To avoid these difficulties, a new line is recommended as a compromise, which will be less expensive in construction than the restoration of the one already overbuilt, will cause much less dissatisfaction and will afford more space for commerce. Unquestionably, this will tend to injure the river to some extent, as all other encroachments have done, but this tendency can be overcome by the judicious expenditure on the other side of the river of half the amount necessary to restore the old line.

The initial point of the old line of 1857, being 338 feet in an easterly direction from the northwest corner of Beauregard and Front streets, narrows the river at that point to about 1,100 feet. This was injudicious, and, owing to the wide space devoted to commerce at that point, was unnecessary; but as the wharves from that down have

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been predicated on that official action, it is proposed to assume that as the starting-point of the new line. Above that it is not deemed necessary to recommend any change. Moving down we find the wharves are generally over the line as far as Government street, where the largest and most serious encroachment of 55 feet has been made. In front of the space between Saint Francis and Dauphin streets is a large and almost solid structure, extending 25 feet over the line on Saint Francis street To remove this would be a serious and expensive work. Adopting it as a second point, and connecting with the first, we have an uninterrupted straight line of over 3,000 feet. Everything projecting beyond this line should be promptly removed.

Below this second point we meet serious difficulties. The wharves between Dauphin and the lower side of Government streets project far beyond the legal and prudent line, and yet the space allotted to commerce, owing to the encroachments of commercial buildings, is very small—too small to be reduced without inconvenience. Thence from Government street down to Theatre, a distance of fully 1,000 feet, the city authorities, by ordinance dated 19th December, 1870, authorized an extension by the New Orleans, Mobile and Chattanooga Railroad Company of their wharf property to a line varying from 30 to 60 feet beyond the line established in 1857. This ordinance, it is true, was repealed by the succeeding city authorities in January, 1871; but the company claims a vested right which could not be recalled. They are now engaged in the work of building out and piling the river to the line granted in December, 1870. The difficulty of restoring the line of 1857 above this railroad concession, serious as I regard the encroachment, induces me to suggest a compromise by which each party shall yield about half its claim. A point on the extension east of the upper line of Government street, 190 feet from the west side of Front street, would bring our line outside of Government street wharf. From that point, in a straight line, to the established point of 1857, opposite Theatre street, would give a line offering as little impediment to navigation as I could advise, and at the same time yield to commerce and to individuals all the concession which can be made without danger of serious consequences. It would slightly increase the concession to the railroad company at Government street, and reduce it below, but still be outside of the line of 1857.

From the point opposite Theatre street, owing to the great reduction in the cross-section of the river from the head of Pinto Island, it is recommended that the line be drawn in, say, 65 feet on Elmira street. This change can be made without prejudice to any interests, as no wharves extend now so far as the line proposed.

The new line proposed would commence, then, at a point on the easterly extension of the north line of Beauregard street 338 feet from the west line of Front; thence by a straight line to a point on the eastern extension of the south line of Saint Francis 232 feet from the west side of Front; thence to a point on the eastern extension of the north line of Government street 190 feet from the west line of Front; thence to a point on the eastern extension of the north line of Theatre street 195 feet from the west line of Commerce, (line of 1857;) thence to a point on the eastern extension of the north line of Palmetto street 245 feet from the west line of Water street; thence in a line to the southern boundary of the city 50 feet west of the line of 1857.

Should the full claim of the New Orleans, Mobile and Texas Railroad Company be recognized, a change will be necessary from the line recommended between the points opposite Saint Francis and Theatre streets, viz: From the established point opposite Saint Francis to a point on the easterly extension of the north line of Church street 310 feet from the west line of Commerce; thence to a point on the easterly extension of the north line of Theatre street 195 feet from the west line of Commerce, (the point in the advised line.) This departure would make a serious encroachment on the river at a point where the water is now deflected, so as to throw it into Pinto Pass, especially as the measurements show a very serious result already. It might be compensated, however, by a counter-work on the opposite side of the river, which would control the current and restore the needed water-way.

Should the proposed plan of a solid quay be accepted, it would be proper to define Front street from Beauregard to Government, and Commerce and Water streets from Government down where they front on the river, and to prohibit all structures on the east side of these streets interfering with the free use of the quay for Commerce.

Front street, from Beauregard to the south line of Saint Francis, might be 100 feet wide; from that point to Government, *to which it should be opened*, it would have to be contracted to 60 feet, so as not to encroach too much upon the space now devoted to commerce. This would give a solid and beautiful quay from Beauregard street to Government street, varying in width from 220 to 110 feet, and below Government varying, according to the line adopted, from 230 to 110 feet, with a constant, living stream of pure water, removing all offensive deposits and keeping a uniform depth which could be regulated to meet the wants of commerce.

The final and definite location of this wharf-line will control, in a great measure, the work necessary to secure the water-way, so as to give a proper width and depth. The plans for this can be soon perfected after that line is located.

No estimate of the cost can be made for building this bulkhead and quay until the

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line is located, and then the interests of private individuals and the city must be arranged before action in that direction.

Respectfully submitted.

BRAXTON BRAGG.

ENGINEER OFFICE, BOARD FOR THE IMPROVEMENT OF THE RIVER, HARBOR, AND BAY OF MOBILE,
Mobile, August 25, 1871.

To the president and members of the board, &c.:

GENTLEMEN: At your last meeting a resolution was adopted approving a front line of the city beyond which no wharf or other structure shall be built, and varying in no essential point from that suggested in my report of the 12th June last, though making some slight concessions with a view to avoid complications and delay. The city engineer fully concurs with me in recommending this line to the city authorities, and it is now before them for such action as in their judgment may seem proper. The line is probably the best that can be secured at this time.

WHARF-LINE.

The initial point is established on the north line of Beauregard street, extended a distance of 350 feet eastward from the west line of Front street; thence by a straight line to a point in the north line of Government street, extended 350 feet eastward from the west side of Commerce street; thence by a straight line to a point in the south line of Church street, extended eastward 285 feet from the west side of Commerce street; thence by a straight line to a point in the south line of Theatre street, extended eastward 210 feet; thence by a straight line to a point in the north line of Elmira street, extended eastward 485 feet from the west side of Water street; thence by a straight line bearing south 10° east; above Beauregard street the line to run north 6° west. This line, when approved by the city authorities, I propose to have permanently designated by heavy piles, conspicuously marked, so that any official can see at a glance when future encroachments are made, and the most rigid accountability should be enforced.

The conclusions reached in my former report as to the effect produced in the main channel of the river by the long-continued encroachments have been fully confirmed by subsequent *data* and by further study of the plans and cross-sections prepared from the surveys.

Above the head of Spanish River the Mobile River has an average width of fully 1,200 feet, with a cross-section of 22,250 feet, and an ample channel-way of 30 feet depth. The same distance below the head of Spanish River, the width of Mobile River is found not to exceed 1,000 feet, with an average cross-section of only 13,000 feet and a channel depth of only 15 feet. Examining further, we find this loss fully accounted for by the cross-section of Spanish River, showing 10,000 square feet and a channel-way 20 feet deep.

Following the Mobile River down, no material change is noticed until we reach the wharves of the city, except some 1,500 square feet added from the Chickasabogue and Three-Mile Creek. From the upper to the lower limits of the city serious encroachments have been made, as reported in my last.

The tendency has been to force the water from the city-front through Pinto Pass, and this tendency has been aided by the very serious encroachments on both sides of the river below the head of Pinto Island. As the result, we find a width of only 640 feet for the main river and a cross-section of only 7,500 square feet, just one-third of the water-way found above Spanish River. The natural effect is apparent just below, in the gradual growth of the marsh flats on both sides of the river near the ends of Pinto Island and Choctaw Point. A continuation of these causes must soon close this channel and ruin all wharf-property below Theatre street and eventually up to Government street.

There is but one remedy for this unfortunate condition, produced by our own imprudence. Further encroachments must be stopped, the way must be opened, and the water must be brought back to the main channel. To open the way only would leave it to be closed again by the same process, and we should have an unceasing, never-ending demand for dredging. Where the river is not obstructed above the city, nature preserves its own channel, with an ample width and depth for all purposes; and it will do so in front of the city and below it, if we will only permit it to execute its own unerring laws.

In addition to the work of opening and controlling the water-way of the river, I have projected and advise the construction of a jettee below Choctaw Point, to prevent the further abrasion of the western shore of the bay and drifting of the sand onto Choctaw Bar, by which the labor of dredging at that point is much increased, and

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the practical results at times greatly reduced. This work will also tend to prevent the spread of the river-water as it enters the head of the bay, and thereby aid in keeping open the channel whenever the dredging shall have been completed.

Recalling your attention to my report on this subject, dated June 12 last, I beg to submit the accompanying plans and estimates for the work necessary to carry out the suggestions then and now made, for restoring and controlling the channel-way of the river below the head of Pinto Island and bringing back to its proper outlet so much of the water now diverted through eastern channels as may be necessary to accomplish this essential object.

Respectfully submitted.

BRAXTON BRAGG, *Engineer.*

APPENDIX.

The following is appended as showing work thus far accomplished by the board:

ENGINEER OFFICE BOARD FOR THE IMPROVEMENT OF THE RIVER, HARBOR, AND BAY OF MOBILE,
Mobile, Alabama, August 29, 1871.

DEAR SIR: The deep interest felt by our own people, and by those with whom we have commercial relations, in the subject of our harbor improvements, induces me, in reply to your inquiry, to furnish such information as my office now affords in regard to the progress of that important work.

At the time of the organization of this board under State laws, in March last, Captain Grant was engaged, under contract with the United States Government, in dredging Choctaw Point Bar, which operation is still in progress. A new contract for continuing this work as far as Dog River Bar has been let to a party from Chicago, who is now here to enter on the work, as I am informed. This dredging-operation is under the control of General J. H. Simpson, United States engineer, an officer of high professional reputation and great experience in this specialty. Finding this part of the work thus provided for, the board of State commissioners undertook other branches of the operation equally necessary for the relief of commerce.

Two lines of artificial obstructions across the channel of the bay had been built during the war, intended to impede the passage of vessels—one near Choctaw Point Bar, the other below and where the channels of Spanish River and Mobile River reunite. These had remained nearly in the condition left by the war, and were both difficult and dangerous, as they left a tortuous passage of only 200 feet in width. Under the direction of this board, both of these lines have been so opened as to straighten the channel and afford a clear passage of more than 600 feet at each point. Vessels drawing 13 feet can now pass these points with safety and ease. In the prosecution of this work we have been greatly aided and much expense saved by the surveys and maps, as well as by the personal assistance, furnished us by General Simpson and his subordinates.

The attention of the board was early drawn to the changed and rapidly-changing condition of the river in front of the city, and elaborate surveys disclose the necessity for large and important works, not only to check the progress of this evil, but to restore the river to its normal position and condition. And as it is no less important that the encroachments which have produced this condition shall be checked, the board has taken prompt action in the matter and has invited the city authorities to co-operate.

A wharf-line for the whole city-front has been adopted, and it has been determined that a solid quay and continuous bulkhead shall be substituted for the present projecting wharves and intervening slips.

Plans and estimates for important works opposite to and below the city, calculated to restore the river to a condition for the accommodation of a commercial marine, largely increased in number and size, are now ready, and the works will soon be under contract. These preliminary works for the amelioration of the condition accomplished or provided for, the board will direct its earnest attention to the main and great object of opening a depth of channel through the bay, already much improved, so as to admit a much larger class of vessels to our wharves. That this can be accomplished there is not a shadow of a doubt. We have examples of much more difficult works successfully completed, and the question here is simply one of time and means. A comprehensive plan once adopted and pursued with persistent energy, with ample means, and the end is easily seen. With the immense resources of Alabama in cotton, coal, and iron opened to the world, the cost of such a work would be repaid ten-fold in one year by the increased business and value of our property. Even in Mobile alone we should soon realize the whole amount, in which all interests would participate. No one of the many important public works on which we are now engaged can surpass this, because the prosperity of each one of them is more or less involved in our success.

With a beginning which promises entire success, and means already provided ample

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to execute a great part of the plan proposed, may we not look to the State and General Government to come to our aid, and insure the completion of a work second in importance and value to no other public enterprise in the country?

Very respectfully, yours,

BRAXTON BRAGG,
Engineer to the Board.

Colonel CHARLES FORSYTH,
Secretary Board of Trade.

APPENDIX B.

AN ORDINANCE to define and establish the eastern line of the wharf-front of the city of Mobile.

SECTION 1. *Be it ordained by the mayor, aldermen, and common council of the city of Mobile*, That the eastern line of the wharf-front of the city of Mobile be, and the same is hereby, established as follows: The initial point to be established on the north line of Beauregard street, extended a distance of 350 feet eastward from the west line of Front street; thence by a straight line to a point in the north line of Government street, extended 350 feet eastward from the west side of Commerce street; thence by a straight line to a point in the south line of Church street, extended eastward 285 feet from the west side of Commerce street; thence by a straight line to a point on the south line of Theatre street, extended eastward 210 feet; thence by a straight line to a point in the north line of Elmira street, extended eastward 485 feet from the west side of Water street; thence by a straight line bearing south ten degrees east, above Beauregard street, the line to run north six degrees west.

SEC. 2. *Be it further ordained*, That the limits prescribed for the wharf-front by section 413 of the code of ordinances of 1866 be, and the same are hereby, amended so as to conform to the provisions of section 1 of this ordinance, and that section 414 of the said code be, and the same is hereby, repealed.

Approved September 16, 1871.

UNITED STATES ENGINEER OFFICE,
Mobile, Alabama, March 23, 1872.

GENERAL: On the 18th instant I had the honor to inform you that I had, as directed by you, furnished the "State board for the improvement of the river, harbor, and bay of Mobile" with a copy of the report of the board of United States engineers, recently convened in this city by virtue of Special Orders No. 4, Headquarters Corps of Engineers, Washington, D. C., of January 6, 1872, for the purpose of preparing a plan for the improvement of this harbor. Since then, there has been the following correspondence, a portion of which has been already communicated, but which I think proper to present in a connected form:

"OFFICE OF THE BOARD FOR THE IMPROVEMENT OF
"THE RIVER, HARBOR, AND BAY OF MOBILE,
"*Mobile, March* 18, 1872.

"SIR: I have the honor to acknowledge the receipt of your note of 16th instant, inclosing copy of letter of 12th instant, to you from General A. A. Humphreys, Chief Engineer United States Army, and copy of the report of the board of engineers, United States Army, recently convened at Mobile under Special Orders No, 4, from Headquarters Corps or Engineers.

"At an early day the papers will be laid before this board and its action thereon communicated to you.

"I am, very respectfully, your obedient servant,

"PERCY WALKER,
"*Secretary, &c.*

"General J. H. SIMPSON,
"*Engineer, United States Army.*"

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"UNITED STATES ENGINEER OFFICE,
"*Mobile, Alabama, March* 18, 1872.

"SIR: On the 16th instant, agreeably to authority from Brigadier General A. A. Humphreys, Chief of the Corps of Engineers, United States Army, dated 12th instant, a copy of which was inclosed, I had the honor to furnish your board with a certified copy of the report of the board of United States engineers constituted by Special Orders No. 4, Headquarters Corps of Engineers, of January 6, 1872, to report a plan for the improvement of the bay of Mobile.

"The letter referred to also informed you that said report had been approved by the Chief of Engineers and Secretary of War, and that I have been directed to conform to the views and recommendations of said United States board in all matters relating to the improvement of the harbor.

"In yesterday's Register, a daily newspaper published in this city, I notice the following advertisement:

"'*To contractors.*

"'ENGINEER OFFICE, BOARD FOR IMPROVEMENT OF THE
"'RIVER, HARBOR, AND BAY OF MOBILE,
"'*No.* 38 *North Royal Street, Mobile, March* 16, 1872.

"'Sealed proposals will be received at this office until 12 m., 25th March, 1872, for repairing and extending two jettees at the head of Spanish River.

"'Specifications of the work, with the terms and conditions, may be seen at this office from 9 to 3 o'clock, daily.

"'BRAXTON BRAGG, *Engineer.*'

"The foregoing notice to contractors, showing that your board are contemplating the partial closing of Spanish River at its head, by repairing and extending two jettees at that point, which works are in direct conflict with the views and recommendations of the United States board, as shown in their report, as the General Government engineer officer in charge of the improvement of the harbor of Mobile, I respectfully but earnestly protest against the construction of any such works by your board, or of any other which will conflict with said report.

"I am, very respectfully, your obedient servant,

"J. H. SIMPSON,
"*Brevet Brigadier General and Colonel of Engineers, U. S. A.*

"PERCY WALKER, Esq.,
"*Secretary of Board for the Improvement of the River, Harbor, and Bay of Mobile.*"

"OFFICE OF THE BOARD FOR THE IMPROVEMENT OF
"THE RIVER, HARBOR, AND BAY OF MOBILE,
"*Mobile, March* 18, 1872.

"SIR: Your note of this date referring to the advertisement by General Bragg, engineer of this board, calling for proposals for repairing and extending two jettees at the head of Spanish River, published in the Mobile Daily Register of 17th instant, and protesting against the construction of that work, has just been received. Your note seems to have been written under the impression that this board had approved of said work after being informed of the report by the board of engineers recently convened in this city.

"Permit me to disabuse your mind of this impression. The report was not received by me until this morning, an hour or two before I dispatched my note of this date acknowledging receipt of yours of 16th instant with its inclosures, and has not yet been seen by any member of the board.

"As my note of this morning stated, a meeting of the board will speedily be held for the purpose of acting on the report, and, without delay, you shall be advised of its action.

"Very respectfully,

"PERCY WALKER,
"*Secretary, &c.*

"General J. H. SIMPSON,
"*Engineer, United States Army.*"

"UNITED STATES ENGINEER OFFICE,
"*Mobile, Alabama, March* 19, 1872.

"SIR: Your letter of 18th instant, acknowledging receipt of my letter of same date protesting against the construction by your board of certain contemplated works at

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the head of Spanish River, and stating that a meeting of said board would speedily be held for the purpose of acting on the report of the United States board recently convened in this city, was received by me last evening.

"I am, very respectfully, your obedient servant,

"J. H. SIMPSON,

"*Brevet Brigadier General and Colonel of Engineers, U. S. A.*

"PERCY WALKER, ESQ.,

"*Secretary of Board for the Improvement of the River, Harbor, and Bay of Mobile.*"

"OFFICE OF THE BOARD FOR THE IMPROVEMENT
"OF THE RIVER, HARBOR, AND BAY OF MOBILE,
"*Mobile, March* 21, 1872.

"SIR: I have the honor to inform you that a meeting of this board was held this day, and your communication to me of the 16th instant, together with the letter to you from General A. A. Humphreys, United States Army, and the report of the board of engineers recently convened in this city to prepare a plan of improvement of harbor of Mobile, was laid before it.

"The action of this board thereon will appear from the following extract from the minutes, a copy of which I was instructed to furnish you with:

"'General J. H. Simpson, engineer United States Army, stationed at Mobile, having, since the last meeting of this board, held on the 15th instant, communicated a copy of the report of the board of engineers, United States Army, convened at this city under a special order from headquarters at Washington, D. C., to prepare a plan for the improvement of the harbor of Mobile, and it appearing from said report that the repair and extension of the jettees at the head of Spanish River directed by this board at said last meeting to be made are not in conformity with the plan of improvement proposed in said report and approved by the Chief of the Engineer Corps and the Secretary of War, and this board not having power to carry out any scheme of improvement not sanctioned by the authorities of the United States, and regarding it as a duty to use the means at the disposal of this board in aid of the plan marked out in the report: therefore, and upon the suggestion of the engineer, the directions given at the said last meeting are hereby recalled, and the secretary is instructed to inform General Simpson thereof, and that this board holds itself in readiness to enter upon such portion of the work contemplated in the report as he may indicate, and he is respectfully requested to inform this board of such designation as soon as possible, in order that due preparations may be made by this board.'

"Very respectfully, your obedient servant,

"PERCY WALKER,
"*Secretary, &c.*

"General J. H. SIMPSON,
"*Engineer, United States Army, Mobile, Alabama.*"

"UNITED STATES ENGINEER OFFICE,
"*Mobile, Alabama, March* 22, 1872.

"SIR: I have the honor to acknowledge the receipt of your letter dated yesterday, communicating the resolution formed by your board same day, to the effect that they had recalled their order directing the repair and extension of the jettees at the head of Spanish River, and that they would, in subordination to the plan recommended by the report of the board of United States engineers, and approved by the Chief of Engineers and the Secretary of War, aid to the extent of the means at their disposal in the improvement of the harbor of Mobile.

"I am gratified with the receipt of this resolution, showing, as it does, a harmony of action on the part of the State board and United States Engineer Department, which cannot but be productive of the happiest results.

"In accordance with the wish of the board, that I should designate the portion of work to be assigned to them, in order that they may enter upon it at the earliest moment, I respectfully state that the lower portion of Dog River Bar channel will be immediately staked out; and it is recommended that the board commence at the northern limits of the upper-fleet anchorage, or 12-foot curve, and dredge to a least depth of 13 feet in the channel from that point, making, at first, one thorough cut (to the extent of the sweep of the dredges) from south to north, and that the material thus excavated be deposited as far on the west shore of the bay, say the sixth curve, as can be approached by the dumping-scows.

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"The soundings have already been made over the said bar, but, allowing for unfavorable weather at this season of the year, it is not believed the channel can be staked out ready for your operations till Monday the 11th of April next.

"Very respectfully, your obedient servant,

"J. H. SIMPSON,

"*Brevet Brigadier General and Colonel of Engineers, U. S. A.*

"PERCY WALKER, Esq.,

"*Secretary of Board for the Improvement of the River, Harbor, and Bay of Mobile.*"

The foregoing correspondence showing that the State board recognize fully the paramount authority of the General Government to prescribe a plan for the improvement of the harbor, and that it is their purpose to aid in carrying out such plan agreeably to the report of the United States board, and to enter upon the work so soon as I shall indicate the portion to be assigned to them, and the following extract from said report setting forth the great necessity of large appropriations for the immediate and rapid excavation of Dog River Bar channel, at present the only great obstruction in the channel of approach to the inner harbor, I respectfully and earnestly recommend that the appropriation I have asked for this object, in my last annual report, to wit, $100,000, be augmented at least to $200,000, and that this recommendation be laid before Congress at its present session, and at the earliest possible moment.

The following is the extract alluded to:

"As to the direction of this artificial channel the board concur with that of 1860, and with both the engineer officers in charge of the Mobile Harbor improvements, that the line of deepest water should be followed as it has existed for the past fifty years, since this line must now be regarded as a resultant of a fixed regimen of the different rivers uniting to produce this channel. The curve at the upper obstructions should be made as gentle as possible, and the opening or width of channel in that part somewhat increased, to admit the ready passage of the largest class of vessels that may enter the inner harbor of Mobile. It is recommended that this excavation be restricted to a width of 200 feet throughout its length, at least until its comparative permanency can be tested or established. *The board give it as their opinion that this excavation should be made as rapidly as possible*, for, if portions only are dredged and left in an uneven or lumpy condition, such portions will fill to the level of the projections; and, besides, there will not be a clear water-way for the ready movement of the bottom current until each bar is cut entirely through and finished to an even surface. If, on the other hand, this dredging should proceed slowly and at intervals, it will be but a partial success. No good results can be predicted, except from a rapid and thorough execution of the work."

I am, very respectfully, your obedient servant,

J. H. SIMPSON,
Colonel of Engineers, U. S. A.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, United States Army, Washington, D. C.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a resolution of the Senate of March 7, 1872, a preliminary report of Lieutenant George M. Wheeler, Corps of Engineers, of the progress of the engineer exploration of the public domain in Nevada and Arizona.

APRIL 20, 1872.—Referred to the Committee on Appropriations and ordered to be printed.

WAR DEPARTMENT,
April 19, 1872.

The Secretary of War has the honor to transmit to the United States Senate a preliminary report of Lieutenant George M. Wheeler, Corps of Engineers, of the progress of the engineer exploration of the public domain in Nevada and Arizona, which, it is believed, will satisfactorily meet the request contained in the Senate resolution of the 7th ultimo, and to invite the attention of that body to the estimate of funds necessary for the continuance of the work, embraced in the letter of the Chief of Engineers forwarding the report, for which purpose no provision was made in the regular estimate for appropriations heretofore made to Congress.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 18, 1872.

SIR: In compliance with the following resolution of the Senate of the United States, "That the Secretary of War be requested to communicate, for the information of the Senate, a report showing the present condition of the explorations now being conducted under the direction of the Engineer Department, (in Nevada and Arizona,) and in the immediate charge of Lieutenant George M. Wheeler, Corps of Engineers," I have the honor to submit herewith a preliminary report from Lieutenant Wheeler, which, it is believed, will furnish all the information contemplated in the resolution. The preliminary topographical map referred to in the report has just been completed, and two copies are transmitted herewith.

I desire to invite attention to the extent of country in the interior

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that has not yet been explored instrumentally, and to recommend to favorable consideration the project and estimate submitted by Lieutenant Wheeler for continuing the exploration of these unknown areas.

For the next season's work the sum of $75,000 is necessary.

The early mapping of this region will be of great service not only for governmental purposes, but in furnishing information eagerly sought for by those interested in mining and other industrial pursuits.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. WM. W. BELKNAP,
Secretary of War.

PRELIMINARY REPORT OF EXPLORATIONS IN NEVADA AND ARIZONA.

BY GEO. M. WHEELER,

First Lieutenant Corps of Engineers.

UNITED STATES ENGINEER OFFICE,
(EXPLORATIONS IN NEVADA AND ARIZONA,)
Washington, D. C., March 19, 1872.

GENERAL: I have the honor to forward, in acknowledgment of your communication of the 12th instant, a preliminary report, with appendices, presenting, so far as circumstances will permit, such of the results relating to the explorations of the past season, (as are liable to be soonest needed,) and explanations regarding the present condition of our labors, thinking that this will in the best manner satisfy the spirit of the resolution of the Senate of the 8th instant, a copy of which you inclose. It will also supply, in a measure, the part of a more detailed annual report, that should have been forwarded from the field only for the great urgency of other duties; and your attention is called to some of the suggestions in favor of a continuance of explorations in the field of our western territory, and to the estimates presented. A preliminary topographical map, now nearly completed, will be forwarded at the earliest opportunity.

All of which is respectfully submitted.

GEO. M. WHEELER,
First Lieutenant, Corps of Engineers, in charge of explorations in Nevada and Arizona.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. Army, Washington, D. C.

INTRODUCTION.

In presenting this preliminary report, it has been deemed advisable to divide it into two separate parts, the first giving the localities included in the survey, some general details, and an average of the cost, based

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upon the area traversed; the second giving, as plainly as circumstances permit, the present condition of the results from this work.

The general plan to be pursued was indicated in the letter of instructions of the Chief of Engineers, dated March 23, 1871, and was only modified as imperative circumstances required. The following is a copy of the letter of instructions mentioned:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 23, 1871.

SIR: The Secretary of War, in his orders of March 18, 1871, a copy of which has been furnished you, has assigned you to the charge of the exploration, under the direction of the Chief of Engineers, of those portions of the United States territory lying south of the Central Pacific Railroad, embracing parts of Eastern Nevada and Arizona.

The main object of this exploration will be to obtain correct topographical knowledge of the country traversed by your parties and to prepare accurate maps of that section. In making this the main object, it is at the same time intended that you ascertain as far as practicable everything relating to the physical features of the country, the numbers, habits, and disposition of the Indians who may live in this section, the selection of such sites as may be of use for future military operations or occupation, and the facilities offered for making rail or common roads, to meet the wants of those who at some future period may occupy or traverse this part of our territory.

In ascertaining the physical features, your attention is particularly called to the mineral resources that may be discovered, and, where the indications would seem to justify it, you should have minute and detailed examinations made of the locality and character of the deposits.

The influence of climate, the geological formations, character and kinds of vegetation, its probable value for agricultural and grazing purposes, relative proportions of woodland, water, and other qualities, which affect its value for the settler, should be carefully observed.

The latitude and longitude of as many as possible of the important points should be accurately determined, and in order to assist you in this, it is suggested that you make arrangements with the officers in charge of the U. S. Lake Survey and United States Naval Observatory, so as to determine by telegraph the longitude of those points nearest your field of labor, with which your field-work can be connected.

To accomplish these objects most effectually, you will divide your expedition into two parts, and have both parties start from points to the west of Elko Station, proceeding in a southerly direction, meet at or near Belmont; following the same plan and direction leaving Belmont, meet at Camp Independence, in California. Leaving Camp Independence, following a southeasterly direction, they will meet at or near Stump Springs, on the old Salt Lake road; upon arriving at this point you will organize a party to go to Fort Mohave, and using the boats already stored there, make an examination of the Colorado River as far as the crossing of the old Santa Fé trail, where they will be met by the main expedition. The boat party will continue to examine the Colorado River, as far as practicable, while the main party will camp at Peacock's Spring. Leaving Peacock's Spring after the junction of the parties, the expedition will divide as before, diverging from this station will come together at Prescott, Arizona Territory. Hence making an examination of the country on both sides of the San Francisco Mountains, when the field-labor may be terminated.

The following places are designated as convenient for depots, viz: Camp Independence, California; Camps Mohave, Hualapais, Whipple, and Apache, in Arizona; and Camps Wingate and Bayard, in New Mexico.

You will use your own judgment in modifying the plan proposed in the event of any unforeseen circumstances or physical obstacles preventing an adherence to it.

To aid you in the discharge of these duties Lieutenant D. W. Lockwood, of the Corps of Engineers, has been ordered to report to you, and you are authorized to employ ten assistants as topographers, geologists, naturalists, &c., at salaries already authorized from this office in letters of previous date; also, the necessary number of packers, guides, and laborers, to complete your party. The whole number of civilian employés not to exceed thirty in number. You will procure your assistants, employés, equipments, supplies, &c., at those points which seem to insure the most economical and effective organization for the party, and are authorized to pay their actual transportation to and from, and to subsist them while in the field.

You will make requisition on this office for such instruments as you may require, and are authorized to purchase one spring-wagon for transporting the astronomical instruments, sextants, chronometers, and magnetic instruments, for the use of the expedition.

All necessary transportation, provisions, supplies, &c., which you cannot obtain from

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the supply departments of the Army, and books, stationery, and drawing materials, will be paid for from the funds in your hands.

You will communicate with this office as often as the means of communication will allow, forwarding the usual reports and returns required by the regulations, and such other reports as will keep this office apprised of your movements, and the progress of the expedition under your charge.

The sum of $50,000 has been set apart to meet your expenses until June 30, 1872, and you are particularly requested to be economical in your disbursements, and under no circumstances to exceed this amount. On the completion of your field duty you will dispose of the public property in your charge, discharge such assistants and employés of your party for whom you have no further need, and return to Washington to make your report and prepare the necessary maps.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General, and Chief of Engineers.

Lieutenant GEORGE M. WHEELER,
Corps of Engineers, Washington, D. C.

The very generous assistance so frequently received at the instance of various bureau officers in Washington, with whom I was brought in contact at the time of fitting out, and especially from Brigadier General M. C. Meigs, Quartermaster General, Brigadier General A. B. Eaton, Commissary General, Brigadier General A. B. Dyer, Chief of Ordnance, Brigadier General G. K. Barnes, Surgeon General, and by the General of the Army and Brigadier General Edward Shriver, was exceedingly gratifying, especially when, having received the orders from the honorable Secretary of War and the letter of instructions from the Chief of Engineers, it became necessary to at once forward the animals, materials, and supplies to the point of rendezvous. In former explorations similar liberal co-operation on the part of the supply departments of the Army had not been placed in the hands of the engineer officer in charge. It is thought that it can be easily shown, because of the material advantages accruing, that this assistance has not been unwisely granted.

The Medical Department was to furnish one surgeon and two hospital stewards. These persons came from the Military Division of the Pacific, and were as follows: Acting Assistant Surgeon A. H. Cochrane; Hospital Stewards, Frank Hecox and T. V. Brown, the latter joining the command at Halleck Station, Nevada. Subsequently, Acting Assistant Surgeon Walter J. Hoffman reported at Carlin, Nevada, having been appointed by the honorable Secretary of War at the instance of Professor S. F. Baird, of the Smithsonian Institution, and upon the recommendation of the Surgeon General. He was at once placed in charge of the departments of mineralogy and natural history. Dr. Cochrane performed the duties of "surgeon to the expedition," while the two hospital stewards accomplished excellent services as meteorological observers.

In accordance with telegraphic orders from War Department, dated March 11, and as mentioned in letter of instructions from the Chief of Engineers of March 23, 1871, Lieutenant D. W. Lockwood, Corps of Engineers, was to have assisted in the performance of the duties of the exploration; but, in consequence of a misunderstanding of the needs of the case, Colonel George Stoneman, then commanding the Department of Arizona, and upon whose staff Lieutenant Lockwood was serving, did not put the order into immediate execution. Subsequently, Lieutenant E. W. Bass, of the Corps of Engineers, received instructions to join the party, and it was supposed that he would reach the first rendezvous at Halleck Station early in May. His

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arrival was awaited until the 11th of that month, when, upon communicating with the adjutant of the United States Military Academy, where Lieutenant Bass was on duty, it was discovered that the order had been revoked. It having been found that Lieutenant Lockwood's services could still be made available, he was re-ordered to report for duty with the expedition; but this order did not reach him in season so as to enable him to enter upon his labors until early in August. This single matter, because of the incident vexatious delays occasioned by the multiple nature of the duties thrust upon my shoulders, was the reason for the loss of nearly one month in time before the parties could be said to have fairly organized for systematic work. This caused serious inconvenience through the entire season, and it often seemed almost certain that, in consequence, the entire field of the labor projected could not be finished prior to the setting in of the winter.

The areas intended to be examined were entirely, with the exception of certain small sections, in Southwestern Utah, within the limits of the Military Division of the Pacific, and the furnishing of the escort was effected through the commanding general, whose kindness in this as well as in all matters relating to the supplies and furthering the objects of the expedition was constantly evinced. The permanent escort that continued with the expedition until its termination came from troop I, Third United States Cavalry, and consisted of two sergeants, four corporals, and twenty-six privates, then serving in the Department of California, Brigadier General E. O. C. Ord commanding, to whom, for his generous aid and counsel at this time, as well as at all others, I feel especially grateful. Other temporary escorts were obtained from several of the posts in Arizona, and Lieutenant Colonel George Crook, commanding this department at the time of our entering its limits, was very kind and liberal in authorizing the facilities asked for in our informal requisitions.

Second Lieutenant D. A. Lyle, Second United States Artillery, who had been serving with his company in Alaska, was, at my request, ordered to join the expedition, but failed to reach any of the rendezvous camps until that one established at Belmont, Nevada, a little prior to July 1, when he was at once placed in charge of main party No. 2 and the escort. He performed this latter duty until the close of the season's operations, and in many ways allied himself with the professional undertakings of the exploration. No lieutenant of cavalry was available to be placed in charge of the escort, as the troops of the Third Cavalry at Camp Halleck were about changing for a southern station. This resulted in no serious inconvenience, as this escort, except for the very few days spent at rendezvous camps, were always divided into two, and often into as many as four parts. In the matter of the determination of the main astronomical stations, especially fruitful assistance was furnished on the part of the officers in charge of the United States Naval Observatory, the United States lake survey, and by the officers and certain operators of the Western Union Telegraph Company. I would particularly express my sense of thanks to Admiral Sands, of the United States Naval Observatory, whose active co-operation secured to me the services of Professor J. R. Eastman at the observatory in Washington, to General C. B. Comstock, of the U. S. Lake Survey, who allowed Civilian Assistant O. B. Wheeler to perform similar service at the observatory at Detroit; to Mr. Orton, president, Messrs. Stager, Tinker, and Ladd, respectively, managers at Chicago, Washington, and San Francisco, of the Western Union Telegraph Company, as well as to Brigham Young, president of the Mormon Church, Salt Lake City, Utah, who, through

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the intervention of Hon. William H. Hooper, tendered the use of the Mormon telegraph from that point to Saint George, Utah. In the matter of instruments it was found that, from those belonging to the Engineer Department on hand at the depot at Willet's Point, but few could be made useful, while the very limited period between the time of receiving orders and that time at which it was necessary to reach the field, was not sufficient to greatly improve the supply by purchase. However, having secured more than was expected from those on hand at San Francisco, the actual needs were satisfied. It requires but a hasty examination to conclude that the elements placed at my disposal were varied and complete, none too many, however, for the wants of an expedition to operate in so severe a section of country for such a length of time.

For the full co-operation of the supply departments of the Army in their liberal interpretation of the orders referring to their respective departments too many thanks cannot be rendered. It would have been impossible, with the means placed at my disposal by the Engineer Department, to have conducted an expedition of such magnitude over so great a range of country within the limited time of one season, except for this very solid and generous assistance. It shall be among my endeavors to show that this has not been illy merited, and ask that reference be made to some of the succeeding pages for a hasty summary of most of the results that have been so far accomplished.

It is with the greatest difficulty that these can be made to seem not meager, since memory has to furnish so much material in the writing of this report, at a time when the majority of the notes are *en route*, or rather blockaded, upon the Union Pacific Railroad. To the many officers in command of military posts along our route, as well as quartermasters and commissaries, to very many gentlemen, superintendents of mines and residents of the mining districts, to various State, territorial and county officials, to members of the public press, contiguous to areas of the exploration, and to various private citizens and others who have extended cordial aid and sympathy to the work allotted to my care, I desire to express my thanks, as well as those of several of the members of the expedition.

CHAPTER I.

The first principal rendezvous at Halleck Station, Nevada, on the Central Pacific Railroad, was established on the 3d of May, and the forces of the expedition were assembled entire within a few days, consisting, in addition to those already mentioned, as follows: Belonging to the engineer assistants and employés there were four topographers, one assistant surveyor, one assistant astronomical observer and computer, one chief geologist, one meteorologist, two collectors in natural history, one photographer, and guides, packers, laborers, &c., numbering thirty in all, which number was increased to thirty-one on the 1st of July by the addition of an assistant astronomical observer and assistant geologist; as quartermaster's employés, including chief packers, cargadores, guides, &c., fifteen. The transportation was as follows: One fifty-mule pack-train, one forty-mule pack-train, one instrument-wagon, and two instrument-carts, two odometer vehicles and riding-animals for officers, civilian assistants, and employés, as well as the escort. While waiting at Halleck

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Station, all the available time of the assistants was spent in journeys and examinations among the adjacent mountains within a radius from twelve to fourteen miles.

Rendezvous camp No. 1, at Halleck Station, Nevada, to rendezvous camp No. 2, near Belmont, Nevada.

The entire expedition moved to Carlin, Nevada, at which point the first main astronomical station was to be established. A side party was here organized for work to the north and westward, and principally outside the zone traversed by the parties of the fortieth parallel survey. This party was to converge upon the remainder of main party No. 2, at Battle Mountain, Nevada, which had been sent there to establish a temporary camp at the commencement of that line. Main party No. 1 cut loose from the railroad about June 1, and passed to the southward, through Mineral Hill, Eureka, and Morey districts, to Belmont, about seven miles from which place the second rendezvous camp was established.

Two side topographical parties detoured from this line, coming in upon the main line successively at Eureka and Morey, visiting many mining districts and gaining valuable topographical and allied information. Main party No. 2, in charge of Acting Assistant Surgeon A. H. Cochrane, moving to the south, passed through Battle Mountain district, reaching Austin, as the first important point of any size. Side parties carried hasty examinations along the Toyabe Range and on either side of the Monitor Range.

The complete rendezvous near Belmont was accomplished on June 24. The field of operations thus far was entirely confined to Nevada.

Rendezvous camp No. 2, near Belmont, Nevada, to rendezvous camp No. 3, at Camp Independence, California.

The interval of time here included is a little more than thirty days. The examinations were over areas in both Nevada and California. Main party No. 2, in charge of Lieutenant Lyle, operated to the south and west, impinging with one side party constantly employed upon the very desert and little-known area to the south and southwest from Belmont, which is a portion of that large tract in Southwestern Nevada hitherto unexplored. I beg leave to append the report presented by this officer, marked Appendix B. Main party No. 1, with two side parties constantly engaged, moved to the south and east, reaching Pahranagat Valley for supplies prior to the direct march thence in nearly a due line toward Camp Independence, over one of the most desolate regions upon the face of the earth, and amid the scenes of disaster of those early emigrant trains who are accredited with having perished in "Death Valley." This entire section is known in common parlance among the settlers of the mining and mountain towns of Nevada as "Death Valley," while the "Death Valley proper" should be limited to that remarkable depression which, at its lowest surface, falls beneath the level of the ocean, and which lies principally in California.

It was thought at first that it would be impracticable to make this march with the entire train, and that it would be necessary to surround this desert section in traveling along lines partially known, and entering it at certain points with parties numbering not more than five or six. It was almost impossible to gain any accurate information of even the chances for grass and water from either white man or Indian, the

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erratic wanderings of the latter having scarcely reached a day's march from their wick-e-ups. A party was dispatched to the southward, toward the Colorado, to establish a supply camp somewhere along Spring Mountain Range, upon which to converge, after the parties should have again crossed the "Death Valley," in their outward journey from Camp Independence. This arrangement proved most fortuitous. On the 23d of July, the rest of the main party were all together at Naquinta Springs, north and west from Tim-pah-ute Peak, with the desert stretching out along our western horizon. The objective point was a place since called Oasis Valley, known at the time to be sensibly to our westward, and containing good grass and water. This locality was reached after three days of the most severe marching, and was found to be a narrow valley, surrounded by low rolling mesas, from which broke, in many places, a large number of springs of good, clear water, but of varying thermal conditions. We remained here until joined by a messenger from Lieutenant Lyle's party, who reported still more terrible difficulties before us. This messenger came in accompanied by an Indian, and reported that he had left Lieutenant Lyle with a relief party on the eastern slope of the Inyo Range, and that he, in company with a guide by the name of Hahn, had gone forward to seek a camp to the eastward, and had been left far from this place by the guide, who apparently was confused from not knowing the country; this guide has never since been heard from. Lieutenant Lyle and party succeeded in reaching a little mining camp near Gold Mountain after great hardship. A subsequent guide sent by this officer explained that it would be impossible to send the main party immediately westward toward Camp Independence; consequently, after reaching Grape-vine Springs which, at the western slope of the foot-hills of a range of this name, faces upon the northwestern arm of the main Death Valley, the train moved to the north and westward, to Deep Spring Valley, reaching there a road, while a party of picked men took up their route nearly due west to reach Camp Independence, no matter what the intervening obstacles, and succeeded in this after suffering what, up to that time, had been some of the most bitter experience that had ever fallen under my observation.

At this rendezvous, as in fact at all others, the time used for the recuperation of animals and arranging for supplies was economically employed by the professional force in local investigation and the preliminary reduction of notes.

At this point the expedition was joined by Lieutenant Lockwood.

Rendezvous No. 3, Camp Independence, California, to No. 4, at Cottonwood Springs, Nevada.

Lieutenant Lockwood having been placed in charge of main party No. 2, was ordered to proceed well to the south, and then turning to the eastward to encircle several of the supposed interior and limited local basins, which, although in the natural profile which trends toward the Colorado, still are separate and inclosed. His party skirted the Sierras for a considerable distance below Owen's Lake, and thence to the eastward and across the lower part of Death Valley. The general features of this trip, as well as those operations intrusted to his charge at subsequent times during the season, will appear in his report herewith submitted and marked Appendix A. Besides a special party in charge of supplies, who sensibly followed the general direction of main line No. 2 toward the next rendezvous, another party followed an indi-

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vidual and separate line. Main party No. 1, in executive charge of Lieutenant Lyle, broke out of Owen's River Valley to the eastward at the head of Owen's Lake and came to the mountains on the western side of Death Valley, where they were joined by a side party that had followed a line *via* the mines at Cerro Gordo, having struck this range of mountains higher up. The main camp was joined by myself after a very severe march, when it was found that a small party had gone to the northward to effect a connection between the two lines. A portion of this party returned, all, in fact, except Mr. Egan, the guide, who has never yet been heard from authentically; his fate, so far, is uncertain; that of any one to have followed him in the particular direction he was taking when last seen would have been *certain* death. More details of this matter occur in the report of Lieutenant Lyle.

The force was massed for the passage of Death Valley, and the camp in advance at Furnace Creek selected. The entrance to the valley was through a narrow, gorge-like cañon, presenting among its tortuous walls a variety of contour and color. The descent was very rapid, and the bed of the valley below, limited in horizon through the narrow opening by the far mountains to the eastward, met our eyes in strange and gloomy vibrations through the superheated atmosphere.

The cañon has been named after the valley, and photographic illustrations here made will give a far more tangible description than words can convey. Finally, one of the bugbears of the trip, that of crossing Death Valley, is over; this particular crossing was near the area of greatest depression, and Dr. Hoffman, with an assistant, was sent to the southward to take barometrical observations; he did not reach the point of greatest depression, however, but the observations from present rough calculations show a level below that of the sea. At our camp at Furnace Creek the thermometer at midnight recorded 109° F. This remarkable valley was crossed in four places.

The Amargosa Desert is next encountered, traversed, and camp made at its eastern edge. Here it became necessary to find the rendezvous that had been ordered to be established in the mountain range to the south and east, which result was determined only after much difficulty, owing partly to the surly nature of the Indians found here and the jaded condition of the men and animals of the command. Finally, intelligence was gotten through to the rendezvous, and their comparatively fresh animals did good service in bringing all the party to the camp, which had been selected at Cottonwood Springs, in a beautiful locality on the eastern slope of the Spring Mountain Range.

Rendezvous No. 4, Cottonwood Springs, Nevada, to Truxton Springs, Arizona Territory, rendezvous camp No. 5.

Prior to the establishing of the next rendezvous, the Colorado was to be crossed; a separate river party was to be organized and put in operation; the rendezvous itself was yet to be selected, also an escort from the Arizona side were to meet us at this point; the land forces were also to keep at work, up to their ordinary maximum capacity, and the plan for those operations, involving the points already mentioned as well as the seeming necessity of using the boats of the river party to cross the land forces at or near the foot of the Grand Cañon, had to be made up in advance, and with the knowledge that physical difficulties would prevent speedy communication in case of mishap. There was no small apprehension on my own part in regard to the success of the programme after it was made out. Subsequently, however, everything that was

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projected was accomplished, and at the appointed times. The land parties were left in charge of Lieutenant Lockwood, still retaining their distinctive party organization, their first objective point being Saint George, in Southwestern Utah. Their course to this point lay along three lines. The party selected for the ascent of the Colorado reached Camp Mohave on the 11th of September, at which post the boats were stored. The boats being in a somewhat damaged condition, several days were occupied in repairs and gathering supplies.

A guide was dispatched to meet the escort who were coming from Camp Hualapais as a re-enforcement; these were to be directed to the rendezvous to be selected, and from thence the guide was to make his way to the northward, crossing the Colorado and reaching the main land camp; this he did with creditable ability and promptitude, and to his action alone belongs, in a measure, the success of the operations along this section. The crossing at the foot of the Grand Cañon was reached on the morning of the 4th of October, and on the evening of the 5th the entire expedition was most successfully crossed. One main line continued on directly to Truxton Springs, the remaining available force branched out in other directions. Meanwhile the boat party entered the jaws of the Grand Cañon, not knowing what was before them. Up to this time the rapids, though often very swift, had not been accompanied with heavy falls, and the estimate for the time requisite to reach the mouth of the Diamond Creek, (called "Diamond River" by Ives,) or the most desirable point at which to connect with the land camp, was based on our experience up to that time, with supposed due allowance for increasing difficulties, and so arranged in the instructions given to the relief parties.

Subsequent revelations showed how inadequate was this plan, and also the chances for suffering that may arise from want of careful judgment and forethought. However, on the 19th of October, after many difficulties, in comparison with which any other of the hardships and privations of the expedition sink into insignificance, the exhausted boat party reached the mouth of Diamond Creek, and are next day gladdened by the sight of the relief party, who visited this point the second time to their assistance. This river trip, occupying only thirty-three days, was quite an exploration of itself, and will be given its due prominence in the final report.

The Mohave Indians accompanying us on this trip proved to be of invaluable assistance, and although several times wishing to desert, because of the tedious labor and their fear of the Pah-Utes, with whom they were at war, nevertheless proved faithful and industrious to the end.

A side party succeeded in reaching the head of the Diamond Creek after some difficult climbing.

The complete rendezvous at Truxton Springs was accomplished on the 23d of October.

From rendezvous No. 5 to rendezvous No. 6, Prescott, Arizona Territory.

The main line with the heavy train debouched to the southward, reaching the military road from Camp Mohave to Prescott, and then pushed on in advance to establish the camp. Main party No. 2 followed the rim of the watershed, dividing the waters that approach the Colorado direct and along the Grand Cañon, and those flowing toward tributaries that, joining, enter farther to the southward.

Lieutenant Lyle, with a picked escort, broke to the south and east,

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with Camp Date Creek as an objective point, and thence via Bradshaw mines to Prescott. Another side party visited the Hualapais district, detoured thence in its march to the southward, coming into the military road near Camp Hualapais, while still another party, going as far as Mohave, brought instruments, supplies, and data deposited there, hence to Prescott. The rendezvous at Prescott was completed November 6. Winter was coming on, and being at least three weeks late in reaching this locality, it was determined to diminish slightly the size of the expedition —which had at all times been too large—at this point; carrying out this plan, the fearful sequel determined that three who had left us were among those unfortunates in the late Wickenburgh stage massacre, another one of the atrocities committed, so far as circumstantial evidence can determine, at the hands of the Indians fed and fostered by our Government upon reservations.

Rendezvous camp No. 6 to Rendezvous No. 7, at Camp Apache, Arizona Territory.

The force, fairly organized, started out well in hand. Party No. 1 moving to the eastward across the Verde River at the caves, about thirty miles north of Camp Verde, thence in a nearly due straight line reaching the high mesa, and finally the northern end of San Francisco Mountains, about which detailed examinations were made, thence turning to the south and east. Camp Apache was an objective point, and the divide of the waters between the basin of the Little Colorado and those of the Verde and Salt Rivers was sensibly the line followed. We were troubled with some snow, and now and then unpleasant winds, all of which was agreeably modified after breaking from the mesa down into the Tonto Basin. The distance proved to be greater than was anticipated, and men and animals reached Apache much jaded.

Main party No. 2 had arrived at this same point a day or two previous, having crossed our line, reaching the Little Colorado, thence via head of the White Mountains. Only a short time was spent here, as already so long in the field, nearly every one was threadbare and ready for rest.

A photograph of the White Mountain Apaches on ration-day was secured.

Rendezvous No. 7, to final rendezvous camp No. 8, at Camp Lowell, Tucson, Arizona Territory.

The march between these points was conducted simply in two main lines, one via San Carlos River and Camp Grant, the second via Pinal Mountains and Florence on the Gila River.

Tucson was reached on the evening of the 5th of December, and preparations for disbanding already begun were hastened to a conclusion, and on the 11th everything had been disposed of and those of the parties who were to go either to San Francisco or Washington had departed. Seventy-one remaining mules, the property of the quartermaster's department, were turned over to the depot quartermaster, and forty-seven others, engineer property, were sold, with a view of being used as transportation in the coming campaign, and it is hoped that these, as also the several experienced packers, who remained, may be doing good service in the fight against the Apaches in the war, supposed already to have been commenced by General Crook, commanding the department.

Thus, in the windings in and out of the main and various detached parties a reconnaissance line of 6,327 miles has been traversed, or nearly

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twice the shortest distance from Washington to San Francisco. A little more than 83,000 square miles of territory has been examined, lying in the following-named political divisions: Nevada, 32,000; California, 19,000; Utah, 1,200; Arizona, 31,000. It is safe to say that five-eighths of this is new ground. The expense has been a little less than $1 per square mile; per square acre not to exceed sixteen one-hundredths cents.

The result has exceeded my most sanguine expectations, so much so that present experience would compel me to ask for two seasons to cover a similar-sized area, and it is hoped will contribute data worthy a place among the records of the Department in regard to this portion of our territory. The line has crossed the route of two railroads already projected, the Atlantic and Pacific, and Texas Pacific, along areas that will have to be traversed by the Utah Southern, and affords the requisite information for those routes north and south, which are so much needed in the development of the mining interest, and which will be eventually required to hold together the diverse interests of sections separated by large distances latitudinally.

It may be said that much of this ground has been visited before, but, although the first party of recorded explorers, who visited sections familiar among the annals of this trip, as early as 1540, more than three centuries ago, and have been succeeded by various parties subsequently up to the present time, still the operations of this season have but joined on to, elaborated upon, and to a certain extent completed their work, mapping sensibly only those portions hitherto known as unexplored instrumentally upon the able map of the Western States and Territories compiled in the Engineer Department by General G. K. Warren, at that time lieutenant in the Corps of Topographical Engineers.

CHAPTER II.

I shall endeavor in this chapter to give the general results upon the subjects mentioned in the letter of instructions from the Chief of Engineers, and with this in view shall divide them into heads, as follows: 1st, astronomical; 2d, topographical; 3d, physico-geographical; 4th, meteorological; 5th, geological; 6th, department of natural history, &c.

ASTRONOMICAL.

The great want in the mapping of the western portion of our territory has been the accurate establishment of astronomical positions. The plan adopted this season has been to secure, at the most proper and available intervals of the perimeter of the area surveyed, the main astronomical stations. During this season these have been to a certain extent accessory to, and governed by, the movements of the parties of the expedition. The locations are as follows: Carlin and Battle Mountain, Nevada; on Central Pacific Railroad, Austin, Nevada; Camp Independence, California; Saint George, Utah; and Prescott, Arizona Territory. Including those determined in 1869, there have been established for main stations, under my supervision, eleven points, in the interior of our western territory. In nine of these cases, the longitude has been determined by telegraph. All have been solidly marked with stone monuments, and are available for future reference.

The principal observer, Mr. E. P. Austin, presents a hasty report,

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submitted herewith, and marked Appendix C, giving a general notion of the character of the work, and the prospective value of the results. Another of the observers, Mr. Marvine, who also at times has had his attention directed to matters of geology, could, if present during the time of arranging the material for a preliminary report, bear more particular testimony regarding the results at Saint George, Utah, and at Prescott, Arizona Territory. His observations, however, when reduced by the computer, will be presented in proper form in the final report.

In order to comprehend fully the character of the value of this astronomical work, the full report will give in addition to the reductions of our own observers, those of Messrs. Eastman and Wheeler, respectively, of the United States Naval Observatory, at Washington, and that of the United States lake survey, at Detroit.

At the intermediate astronomical stations, the observations have been taken with sextants, giving a check more particularly upon the latitudes.

The majority of the stations were confined to the two main lines of the survey, and the character of the work varies in no remarkable particular from that ordinarily performed in the Pacific Railroad surveys. Data from these observations will be properly grouped in tables for future reference.

TOPOGRAPHICAL.

The plan pursued has been to attach one topographer to each of the main and side parties, who was assisted by one observer taking odometer readings, and another person to read the barometer for relative and absolute altitude of the station.

In the frame-work of the map are the main astronomical points, the intermediate astronomical points coming in at the ends of the daily marches, while between each two of these latter the topographer takes as many stations as may be needed to satisfy him in regard to the details. The base line is then the meandered line, measured by the odometer, checked by astronomical positions and angular bearings from prominent mountain peaks.

The portable transits employed, having a telescope of considerable focal power, give quite accurate readings for the bearings, and a skillful topographer, after a little practice, varies but slightly in his latitudes and departures from those given by the astronomical positions.

The aneroid readings give data for a general profile of the routes and the heights of the stations, and after these observations are reduced by comparing with the cistern barometer, give a series of results of surprising relative accuracy.

In the vicinity of the rendezvous camps more time was available, and more minute surveys carried out. The contours of the areas, covered by mineral development in two mining districts, were taken.

The method of moving in two lines, flanked at least by one side party adjacent to each, has worked very successfully, and in a great measure accounts for the very extensive results obtained topographically. The difficulty of keeping these parties supplied, and in a state of active co-operation, calls for very constant, strenuous exertions, however, on the part of the officer in charge.

As a certain allotment of funds and material had been made for one season's work to cover a certain area, it became necessary, in order to consumate the results expected, to work with much celerity and little or no intermission, and the force at my disposal were constantly pressed

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with labors that gave them little if any rest, and no recreation from the commencement to the end of the season.

It is with no little satisfaction that I can bear testimony to the willingness of the civilian assistants and employés, with scarce an exception, to make any and all exertions, or undergo such privations as were required of them.

In gaining topographical information, special attention was given to the determination of the perimeter line of the water-sheds of the exterior and interior basins; to the relative portions of mountain and valley; to the size and extent of the arable, mineral, and desert sections; of the distribution of springs, streams, timber, &c., all of which are to appear in the final map or maps.

The areas inhabited by the Indian tribes are also to be marked out, and the varieties of observations afford material for the construction of a number of maps.

The possible location for routes by rail, or common roads, along lines sensibly north and south, have been carefully studied, and to this end the expedition has followed out and made use of the system employed in the earlier surveys for a railroad route from the Mississippi to the Pacific Ocean; more accuracy having been obtained because of the superior character of the astronomical stations, and the improvement in field instruments now used.

The large field traversed while upon various trips since 1868, up to that of the present season, has rendered me conversant with a considerable section of country over which, in the final topographical map, a more systematic nomenclature can be adopted.

Among those portions prosecuted more in detail, and presenting novel and interesting results, is the survey of the Colorado, partly hydrograpic in its nature, and which adds unique information to the topographical knowledge of our continent.

The general tendency of projecting too much has been felt in this undertaking, and must always follow as the experience of any one who estimates for a scheme of exploration, no matter how little or how greatly elaborate among those sections of our western territory still unmapped, where the physical obstacles are so varied and difficult.

PHYSICO-GEOGRAPHICAL.

The operations of the past season have been conducted in a great measure in and around the great American desert.

Go where you will in your journey westward, from the Rocky Mountains to the Pacific Ocean, you must cross its barren and uninviting plains, valleys, or mountains. Its configuration is varied, as are many of its local characteristics; in width ranging from seventy-five to two hundred and fifty miles, but nowhere narrowing so that an east and west line can be prolonged entirely through arable sections.

The elevations of this great area vary, from the depression in Death Valley, below the level of the sea, to mountain valleys, from six to seven thousand feet in altitude, surrounded by rugged and often desolate ranges, whose summits tower to heights of eleven and twelve thousand feet.

The general trend of these mountain chains from the fortieth to the thirty-fifth parallel is sensibly north and south, with spurs and ridges that bear for the general part to the northwest and southeast, the eastern slopes of the main ridges being by far the most gentle.

Passing into Arizona, the continuity of the characteristic trend of the

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Cordillera system is somewhat broken in that area occupying so large a portion of Northeastern Arizona, that will be named upon the maps as the Colorado Plateau. Upon the summit of this grand plateau one encounters the rolling and broken mesa formation through which have obtruded at many points, volcanic mountain peaks, that lift their black sides far in the horizon.

Through the middle of the Territory the ranges, formed of the more primitive rocks, steer on in their course, and are met, as it were, by other ranges that, converging in direction, follow onward in their deliberate advance, massing in the Sierra Madre of Mexico.

The present map submitted will give somewhat of a general view of these more prominent features.

Physical geography details, always having more direct reference to the vertical lines of a survey, have been sought after, and the wants of the case attended to so far as possible. The positive and relative altitudes of a multitude of points have been secured.

Profiles along many lines of the basins, both exterior and interior, can be produced; the configurations of the mountains, valleys, rivers, creeks, and springs, in their general relation, have been noted. The character and supposed extent of the great Colorado Plateau, the peculiar features of which have, for the first time, been delineated, were partially studied and need but one more expedition to complete.

Examinations while ascending the famous cañon of the Colorado chronicle, *in memoriam*, additions to those data, gradually being collated, referring to the beginning of the creation of the world; and while watching the gloomy sides of these grand walls, listening to the confused mutterings of the restless waters, whose continual flow through geologic years have so seldom awakened a sound beyond their own echoes, comes the thought that the time necessary for the creation, full development, and extinction of one single animal race, falls into insignificance in comparison with the eras that may have passed while this erosive agent of nature was stealing slowly down to its present bed.

The exploration has determined the existence and limits of several basins, completely inclosed, without drainage to the ocean and outside either of the Great Salt Lake or Humboldt Basins, principally found in Nevada, to the east of the Sierras and north of latidude 35° 30′; of these the Death Valley Basin is characteristic.

The face of the country, especially in those locations where the primitive rocks are superimposed unconformably, by volcanic material belonging to the older series, is rapidly changing by denudations; the constant action of these degradations being to decrease the declivities of the mountains, carrying the *débris* far out into the valleys, the disintegration constantly furnishing earthy material for new series of plants from age to age.

Along very many areas in Nevada and Arizona, quite extensive forests fringe the high mountains and plateaus. The grand Colorado Plateau, so immense in size, is, over a great share of its surface, covered with pine forests and parks.

The greater portion of the area examined in Southeastern California was of the most barren and desolate nature, the bare and brown rocks seldom being relieved by any sort of vegetation.

Piñon pine and a stunted growth of mountain cedar abound in frequent localities in Nevada. The pine found after crossing the Colorado is similar in character to what is known as the short-leaved southern pine. Fir and hemlock are noted along the slopes of the high mountains; mesquite, mountain mahogany, and cactus in the valleys.

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The view from Humphrey's Peak, on the San Francisco Mountains, is along a magnificent and extended horizon to the northeast, east, and southeast, limited by the plateau formation with its mesa bluffs of various colors, on the west by the ranges along the Colorado, and on the south and southwest by the Black Hills and Mazatzal, while in this direction, also, the grand peaks of the White Mountain Range tower in the horizon. At our feet lay the upturned mouths of numerous craters, upon the sides of which, in many cases, heavy timber is growing, undisturbed by those volcanic bursts which, in their efforts to reach an equilibrium, carried high in air the ground now under our feet, and raised that lofty pile upon which we were standing, which served a long time as a vent for those interior fires, and then became forever silent, leaving what we now see—the bed of an immense extinct crater.

It will be with the greatest interest that the future observer carries his studies among the lofty peaks, the broken mesas, and astonishing cañons of this great Colorado Plateau, which in its geographical area covers spaces aggregating, possibly, 60,000 square miles, and distributed in four political divisions, viz, Utah, Arizona, New Mexico, and Colorado.

METEOROLOGICAL.

These observations comprise the usual full series, taken with the latest and most improved instruments.

At the rendezvous camps hourly observations were taken for the purpose of computing approximate tables of the horary corrections at various altitudes through the mountain regions. In addition, frequent observations for the correction of the aneroids and with a view to obtaining a reference scale.

At all camps the usual tri-daily barometric, &c., observations were taken, while at each one of the minor topographical stations the aneroid barometer was read.

The two hospital stewards who were the observers assisted at the hourly stations. The computations are now being made, and the results will appear in sheets giving the general meteorological record, the comparisons of the aneroids and the hourly series, with plottings of the approximate horary curves.

The results of this season, comprised with those of 1869, add considerably to the meteorological data of this region. The working-up of these results is at present in the hands of Lieutenant Lockwood, and, proving favorable as now expected, will contribute a little to the want that can only be supplied by establishing a comprehensive system of permanent meteorological stations, (for minute and careful observations,) at high altitudes, throughout the entire western interior.

GEOLOGICAL.

Investigations in this department were committed to the care of G. K. Gilbert, who was assisted a portion of the time by A. R. Marvine, after the completion of astronomical work at Saint George, Utah, and at desultory intervals by C. A. Ogden.

I shall present herewith, marked Appendix D, the report of Mr. Gilbert, which will speak for itself, and sustains the high character entertained regarding his labors and abilities. Mr. Marvine is at present engaged in placing the results of his examinations in the form of a report.

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NATURAL HISTORY.

Dr. Walter J. Hoffman, in charge, was assisted by two collectors, besides the volunteer aid of certain other members of the expedition, to whom credit will be given in due time.

The collections of coleoptera and botanical specimens have been large and comprehensive; in many other branches the scarcity of the material and rapidity of the movements prevented more complete and careful collections.

By authority of the Engineer Department, and through the kindness of Professor S. F. Baird, these collections will be at once sent to the Smithsonian Institution, under whose directions the examination of specimens will be conducted.

MINERALOGY.

This department has been in the hands of Dr. Walter J. Hoffman, while various members have contributed silver-ore specimens. A report on this subject is being compiled by this gentleman.

In this connection let me say that an attempt is being made to gather a very large collection, fully representing the silver ores of the Pacific coast, by large and characteristic specimens, collected in duplicate, and deposited in the national museums of the Smithsonian and West Point. The nucleus already collected gives promise of good results.

MAGNETIC OBSERVATIONS.

There have been observations for declination and dip; for the former a field theodolite, simply, was used; for the latter a dip circle, procured from the United States Coast Survey, which was, however, lost in the Grand Cañon of the Colorado, among many other very valuable and useful articles. The record of the observations up to this time was preserved.

PHOTOGRAPHS.

In the hands of Mr. O'Sullivan, well known in connection with his labors on the Fortieth Parallel Survey and Darien Expedition, a little less than three hundred negatives have been produced, illustrating the general appearance of the country, the mining districts, certain geological views, and a full and characteristic representation of that very grand and peculiar scenery, found only among the cañons of the Colorado; a more unique series has hardly been produced in this country.

To add more testimony illustrative of the character and general appearance of the areas traversed, various sketches have been made along the line of the routes, and among the cañons of the Colorado.

MEANS OF COMMUNICATION.

The close of the present century bids fair to be the era, above all others, of increased rail communication. The great necessity for, and interest evinced in, pushing routes through to the Pacific has been accomplished; one line is complete; three others are projected, and will, without doubt, be built. The east and west lines, then, are secured. Now, it seems that north and south lines are needed to communicate with these east and west lines, to be adjuncts to their usefulness in the

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tendency to develop the mineral resources of this portion of our territory.

There should be three roads running south from the Central Pacific Railroad and between the Sierras and Wahsatch Mountains, situated as follows:

The first, already projected, bears southerly from Salt Lake to the Colorado River, to cross near the foot of the Grand Cañon.

The second to leave the railroad, pass through Washoe, and thence along immediately east of the Sierras.

A third leaving the railroad in a central position, and crossing the Colorado River at the mouth of the Virgin. Let these be narrow-gauge roads if you will, but the country needs them to carry supplies and material to its mines, and to bring ore and bullion from them.

From the reports of Messrs. Lockwood and Lyle, I am led to believe that a new mail and wagon route may be constructed from Saint George, Utah, to Prescott, Arizona Territory. Granting this, it could at the present time be occupied as a mail-route, and upon building the wagon-road, troops could then be moved from north to south in our western interior without the heavy expense of first transporting them to the seaboard. This route will be through Salt Lake City, on a stage-road to Saint George, thence, by a road to be constructed at little expense, to Prescott, Arizona Territory.

In the future, and after the proper development of the mines that have been, and are still being discovered in the vicinity of the Colorado River, the means of communication on this river will be both increased and strengthened.

This exploration has determined that navigation in suitable crafts can be carried much higher than has been supposed. A little healthy competition, in case there was traffic enough to warrant it, would soon lessen the prices from San Francisco to Mohave from $80 per ton at present demanded, as I understand, from the citizens.

However, I am pleased to learn that the present navigation company are offering liberal inducements to parties desiring to ship ores by their route, on the return trip to San Francisco.

Steamers at present navigate as high as Camp Mohave, four hundred and twenty-five miles from the mouth of the river; they have often carried cargoes to El Dorado Cañon, fifty-nine miles higher. One steamer succeeded in reaching Callville, about ninety-five miles from Mohave, without material difficulty. It is concluded, should the necessity present itself, that navigation by steam-power may be carried to the foot of the Grand Cañon, or fifty-seven miles beyond Callville. The relation of the power of the engine to the size and draught of the steamer should be changed for navigating above Mohave, increasing motive-power and decreasing draught and size. Possibly the barges should be decreased in tonnage from one hundred and fifty to one hundred tons. Each steamer should be fitted with a steam-capstan, and at certain points ring-bolts should be fastened in the rocks above the heads of the rapids, for cordelling purposes.

I would like especially to mention my indebtedness to Captain J. A. Mellon, of the steamer Cocopah, for certain sensible information on this subject.

Let us suppose that we can navigate as far as the foot of the Grand Cañon; the question naturally comes up, what necessity, present or prospective, calls for this? I will answer, so far as my observation leads to a conclusion, that the wants of the present century will ask for no line of transportation to ascend the river higher than Cottonwood Isl[illegible]

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which point might be made the depot for traffic to interior mining localities in Nevada and Arizona; (see map.)

But to return to the east and west lines, now in process of construction; it seems certain, from the increased evidence adduced, from the nature of the travel and transportation along that single line already constructed, that the time is not greatly in the future that, if we expect to gather transcontinental shipments, some one road, reliable at all seasons of the year, must be completed; and the experience which my present travels has afforded pledges opinion in favor of the line lately surveyed in the vicinity of the thirty-fifth parallel.

INDIANS.

The experience of this season has given considerable further opportunity for studying the Indian character, their habits of life, geographical distribution, &c. This experience has in no way produced a sympathy with that class of well-intentioned but illy-informed citizens who claim that the Indians are a much-abused race.

My several trips of the past four years have allowed full opportunity for immediate observation on this subject; therefore, in a subsequent report I propose to present my views at greater length.

The areas inhabited by, and known as the country of, the Shoshones, Pah-Utes, Chemehuevis, Utes, Mohaves, Seviches, Hualapais, Apache-Mojaves, Cosninas, Apache, (Tontos, Pinals, Coyoteros, and Arivapas,) &c., have been pretty accurately determined, and will be mapped out. It was with no little surprise that, upon examining the best sources of information, viz, that obtained through Army officers, it was found that the actual number of the Apache warriors, who could take the field, would not exceed fifteen hundred. Major John Green, of the First United States Cavalry, who has had considerable experience among them, positively asserted that they could not muster twelve hundred men from all the tribes, including the White Mountain Indians, many of whom have been upon reservations since 1868.

All the tribes, without exception, belong to that wild, roving breed known as "Mountain Indians." Their lawless and migratory life has carried them beyond the notion of anything like order, even among their own people.

It may not be uninteresting, at this particular period, when there are so many diverse opinions, or rather theories, extant regarding the position or supposed condition of the hostile Indians in the Southwest, to acquaint the War Department, through the medium of this report, with the influence that the Indians, as we found them, have had as a help or as a hinderance to the objects of this exploration, so that at subsequent periods, when other parties shall have in hand the duties of surveying out remote, inaccessible, and inhospitable regions, they may have the benefit of the experience.

The general plan of moving in two lines, and receiving the co-operation of small side parties, cannot but work admirably in any scheme of geographical exploration. Let us see how much friendly Indians can be of service.

We will premise that it is incompatible to divide up into four or five parties in a hostile country without calling on the military posts for greater escorts than could be reasonably expected from them; therefore, as in the present case, it was found necessary to move in two parties only, while engaged in those parts of Arizona known as the habitation of the hostile Apache. This fact explains the principal hinderance. It is

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almost impossible to obtain white guides who have any accurate knowledge of regions sensibly new, while hardly any nook or corner can be found not well known to the Indian; hence in the selection of suitable camping-places, and as assistants to a natural guide, or to a white man who shall exercise judgment as to the movement of the command, their services can be made very valuable. The entire expedition, composed of officers, soldiers, and civilians, averaged from eighty to one hundred and ten, being divided into parties varying from five to fifty.

The little parties are really the ones that accomplish the most actual work. In Nevada, to each one of these little parties an Indian could be attached, and oftentimes two, who, in view of a small remuneration and plenty of food, served both as guide and laborer, thereby causing a positive benefit, and, in all cases, relieving that apprehension of danger which all parties in a new country must experience, and which, to many, is more uncomfortable than danger itself.

From among the Pah-Utes, in the Spring Mountain Range, often as many as seven or eight guides and messengers were employed at one time. These Indians have been considered friendly for some years, but frequently prospectors, in parties of two, going out into the mountains, never return. They have, however, a wonderful regard for a superior force.

The semi-hostile Indians, as the Seviches, south of the Colorado, and the renegade Hualapais, found bordering the country of the Apache-Mohaves, can be made useful to a certain extent by a party of respectable size. No squad less than five in number should at present trust themselves among them.

From the friendly Indians the ranchmen and miners get more or less assistance in and around their farms, working in the mines and as messengers; in this way they greatly facilitate the early development in this section.

Now, how is all this changed, when one comes into the hostile Apache country! A party with a proper guard may travel for weeks and never see an Indian, except here and there, outside of range, and then generally more wild than a deer.

In conducting examinations a single member even of the professional corps must be provided with a guard before it is safe for him to pass the brow of a hill in front of camp.

By dint of great perseverance a semi-friendly Indian may be impressed into the service of guiding a party into a hostile country, but there is no certainty that he will be true to his trust.

This hasty sketch gives some notion of the disadvantages of conducting an exploration over a country occupied by hostile Indians; the subject needs only to be suggested to call attention to the fact that every essential detail is, of a necessity, greatly contracted.

The well-beaten Apache trails from Arizona to Sonora attest the fact of the lines long followed in raids upon the Mexican ranches and stock.

The legend exists among the Apaches that they were once a concentrated and powerful race, far surpassing in strength the Navajoes, with whom they had frequent encounters. Their horses, cattle, and sheep were plenty; their crops large; their chiefs came from a line of hereditary princes. Finally, dissensions arising, the cupidity of certain upstart chieftains caused troublous times, the dividing into separate bands, and a general war among themselves resulting. The end came in complete desolation and poverty. This continued nearly up to the time of the acquisition of the territory by the United States, when, against a

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common enemy, the white man, they banded together for defense. The secret of their great terror to the whites is their lawless and roving life, giving celerity to their movements with great powers of endurance. The common experience in settling questions with such tribes, and the only one that has proven successful, is to thoroughly whip them, after which they never make any determined resistance.

The Indians of Arizona have never been made to feel that they had any master beyond their own will for a wild and Bohemian life. No continuous concentration of force has been directed to their rancherias and villages, there to meet and teach them that they must give up their habits of violence and murder, or submit to the inevitable fate of destruction.

Let the Indian policy of this Government be what it may, the Indian question in Arizona will never be settled until the campaigns of an energetic officer shall thoroughly whip and subdue them. Let this be done and they are then as amenable as the Shoshones of Nevada or the Hualapais of Northwestern Arizona.

The tribes encountered during the present season will be denominated, respectively, as friendly, semi-friendly, and hostile. In the first we must place the Shoshones, Pah-Utes, Chemehuevis, Utes, Mohaves, and possibly the Hualapais, as they are now nearly all on a reservation, and no longer consider it policy to hold out against the whites. In the second, Seviches, Apache-Mohaves, Cosninas, and Apache-Coyoteros. Among those undoubtedly hostile are the Apaches, known as Tontos, Pinals, and Arivapas. Other Apache tribes, as the Mescaleros, Bonitos, and those governed by Cachise, were outside the lines embraced in the present exploration.

In this connection it seems almost impossible not to revert to that source of disaster to three members of the expedition, who were victims in the Wickenburgh stage massacre, for which I most thoroughly believe the Indians are responsible. Considerable trouble was taken in investigating this case through the agencies of parties sent to the locality, and the weight of evidence convicts the Indians, and possibly those, too, who were drawing their food and supplies from the Government. From a careful study of the case I am led to believe that the Indians in the vicinity of the Date Creek reservation, as in fact those in various other localities in Arizona, gathered courage from the fact that a peace commissioner had lately been in their midst, and hence thought with the greater impunity to commit this deed of violence with which their innate character had so much natural sympathy. Here were three men who had mastered all the toil and hardships of a severe campaign, who started homeward pleased with the thought of dangers escaped and duties well performed, who, after passing what was supposed to be unsafe ground, fell victims to an Indian ambuscade. One of these, a young man just entering upon his career, with years of promise before him, one drop of whose blood the whole Apache race could not expiate, parted with his life; and forgetting all else, in the records of humanity, this life, as well as that of the others, should be charged to the Indians.

Wherever opportunity afforded, conciliatory talks were held with the Indians, and the result was advantageous in the case of the Pah-Utes and Mohaves. The former tribe, assisted by the Chemehuevis, who are an allied race, had been at war for five years with the Mohaves; the cause of this difficulty was sought out, advice given, and during the river trip the captain of the Mohaves, who accompanied us, had a meeting with one of the Pah-Ute captains, through whom an amicable adjustment was arranged.

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The ruins of the famous Aztec tribes, a name so rhythmical in legend, were met in many localities. Their status can be referred to as little better than—if indeed quite as good as—those Pueblo Indians, among whom we now have evidences remaining in the Zunis and Moquis besides other local tribes on the Rio Grande, however great their numbers might have been. They were doubtless driven from their accustomed habitation by the Apaches coming from the southward, and forced to seek for shelter, those caves occupied by them as fortifications, finally becoming extinct, as must every race in the presence and in the line of progress of that race superior both in numbers and intelligence.

SITES FOR MILITARY POSTS.

These refer to positions for occupation and for operations. The selection for the sites of temporary or permanent military posts generally originates with the general commanding either the division or department, and their basis is determined by his peculiar ideas of the necessity therefor.

Scouting parties ordinarily discover a sufficient number of places, in advance of the pushing forward of troops into a new, hostile Indian country, and their reports go on record at the headquarters; therefore the results on this subject will be shown simply in marking upon the final map those points that can be conveniently occupied for military posts or scouting camps.

INFLUENCE OF CLIMATE.

The climatology of the Pacific coast, although a subject of great importance and interest, yet, for the want of systematic data, remains in a very vague condition.

So far as the climatic oscillations now in progress are concerned, the general observations of so hasty an exploration can bear no great testimony. Beyond the geological examinations that notice the translation of alluvial material by direct atmospheric influences, our investigations were confined more directly to the quite complete series of meteorological observations. At the present time these are not in shape to be analyzed.

The principal portion of our time was spent in the great basin of the Colorado, and among some of the outlying or rather interior basins to the northwest. At present, throughout this area, arable sections are scarce, and but few of these have been entered by the settlers. Little by little, however, the desert edges will be reclaimed by irrigation, and reference has only to be made to that narrow strip of mountain valleys in the western portion of Utah, now inhabited by the Mormons, to show what the hand of industry and necessity may do in reclaiming arid lands and bringing them under cultivation. I cannot but believe that many of the mountain valleys in Nevada and Arizona will at no distant date become peopled, as are now many of those from Salt Lake to the southward.

It is generally admitted that large amounts of the aqueous vapors from the oceans rise to the higher currents of the atmosphere and are there carried, by rapid rates of motion, through long and wide intervals. The great atmospheric gulf stream of the middle and southwestern Pacific Ocean, impinges with its humid strata along the entire Pacific coast. A portion in the higher currents, from local surroundings, reaches its maximum of condensation while passing over the coast range, while

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the remainder progresses onward until it is caught by the Sierras, where it deposits in the form of rain or snow.

The upper portion of the great interior basin beyond lies exterior to this influence. The broad Tulare Valley of California in between the Sierras and the coast, if it could rise up and catch this moisture, would become the scene of a luxurious vegetation, whereas now the changes from the very wet to the very dry season, annually, are strongly marked.

Let us suppose, however, that from the irrigating power that can be secured from the streams that rise in the Sierras, and have their primal source from these same humid currents of the upper air, 5,000,000 of acres could be brought under cultivation, with fields of corn and wheat, groves of fruit and forest trees, and varieties of vegetation, will it not be reasonable to conclude that, during this interval, the local surrounding climate will undergo slow changes, so that the atmosphere charged with humidity from this immense evaporation will bring about its own deposits of rain, thereby causing a temporary vacuum, as it were, into which would fall portions of the moisture, at that time in passage in the higher regions? Such a theory is not yet supported by known and pronounced facts; it may not be uninteresting to consider it in advance as among those changes to climate that the industries of man are producing. This same surcharged upper stratum that strikes the coast farther to the southward, follows the bed of the Colorado for a long distance, and the effects from it branch farther out as the approach is made to the higher ranges of mountains, situated in the northeastern portion of that basin.

In this direction, the Sierras having lost their specific character, and breaking over toward the coast range, do not impose a barrier, and none is met until the Wahsatch and Uintah Mountains are reached, in whose higher altitudes it is understood that the humidity, that has had its origin at the surface of the sea, is felt, and can be noticed by the more delicate meteorological instruments.

Extreme ranges of temperature have been encountered along the route, ranging from 8° F. as the maximum cold, to 109° F. at midnight, for the greatest heat. Difference of wet and dry bulb readings, give a a range from 95° F. to 45° F. The equability of temperature and regularity of the winds and rains of most of the valleys south of 38° latitude and until Southern Arizona is reached, combine to render the climate a very healthy and agreeable one.

AGRICULTURAL AND GRAZING LANDS.

As before stated, the arable lands of Nevada are very small in relative amount; contrasting Nevada with Arizona, the latter has the advantage in relative proportions, as will be shown by the statistical map to be constructed.

Nevada cannot claim to be an agricultural section, but most of the local wants for the mining inhabitants could be supplied from home production. In Arizona, in and around Prescott, along the valley of the upper Gila, Salt and Verde Rivers, south of Tucson, along the Santa Cruz River and Sonoita Creek, there is an area capable of sustaining quite an agricultural population; some of the finest soil that I have ever seen has lately been broken up along the Gila, and around the settlement called Florence.

In the matter of natural facilities for grazing large herds of stock, Arizona ranks Nevada; in the number of mining districts Nevada leads

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far in the advance. As far as the probable amount of bullion from the two, at a time twenty years from now, is concerned, it is hard to say. It is believed that after the Indian difficulty is settled, and railroads are brought into Arizona, that districts already examined will be worked profitably, and stimulus given to further and more careful prospecting. When the Indians have become peaceable, the valleys and rolling foothills will afford the most excellent pasturage for very large herds of stock, with their covering of bunch and gramma grasses. At the present time, stock not herded by a respectable force is not safe in any portion of Arizona, except at certain localities along the Lower Gila and Colorado, and in the Hualapais country, or northwestern part of the Territory.

It is safe, also, to say that the time is close at hand when these areas will become great grazing-grounds, for, in the onward march of population, the stock-ranches skirting the tributaries on the west of the Mississippi and Missouri Rivers must give way to the settler who wishes to till the soil, and the value per acre gradually gets beyond where it becomes profitable to use it for stock-raising purposes. Thus year by year, droves of horses, cattle, and sheep are being driven more and more toward the far West; valleys in Nevada that in 1869 were uninhabited were heard to have been filled up subsequently with stock during the interval, and within two years every available stock-range in the State will have been appropriated.

Very little game is found in and around the more desert portions of Nevada and Arizona; in fact it may be said that there is a zone of comparatively no game, whether large or small, limited on the west by the Sierras, on the east by the Wahsatch Mountains, north by 40°, and south by 35° 30′ north latitude.

In Northeastern and Eastern Arizona many herds of deer and antelope were seen; bear, of the brown or cinnamon and grizzly varieties, and wild turkey. A certain strip, commencing on the eastern part and continuing south into Arizona, is also frequented by many species of game.

Coal, of economic value, lay but at one portion of our route, so far as had been discovered, and that was at the northwestern end of the White Mountains. Many Carboniferous strata appear, but the coal-beds are wanting.

In and around Death Valley, among the cañons of the Colorado, and at very many mining districts, granite and various volcanic rocks, offering a good variety of building material, were noted.

MINES.

This subject, which above all others, merits the most attention of any one of the practical and immediately remunerative interests belonging to the field of this exploration, was not made specially prominent in the letter of instructions. However, my experience on the western slope at other times than during the present season, has thrown me much among the mines and miners, and I believe it is to be the one subject which, if studied practically, can be more benefited by honest industry in examination and intelligence in description, than any other that refers either to the commercial or industrial pursuits of the Pacific coast. At the present time I am laboring under two great difficulties. First, many of the valuable detailed notes collected during the past four years, and appearing as memoranda in certain books that were inadvertently taken on the Colorado, were lost at the bottom of that river; and second, very many other later and duplicated notes are now

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en route; therefore memory has measurably to satisfy the claims that attach to this important subject.

The total number of mining districts within the area covered by the exploration was ninety-two, of which eighty-six were visited by some member or members of the expedition; of these fifty-seven are in Nevada, eighteen in California, seventeen in Arizona. In connection with those entered in 1869, my immediate attention has been called to more than one hundred districts, mostly of the silver-bearing ores. The location and size of all these appear on the map, and from it a great deal of valuable information regarding the practicability of reaching these districts, with a view to any mining operation, can be obtained.

Personal examinations were made in the mining districts by Lieutenants Lockwood and Lyle, Dr. Hoffman, and Civilian Assistant Gilbert, all of whom present memorandum reports. In some cases a topographical party alone visited the district. In order to facilitate the amount of information to be gained from the necessarily hasty examinations of many districts, lists of questions, forty-five in number, a copy of which is attached to show the character of the information that was obtained, were prepared so as to be filled out while in the district. It will be attempted to duplicate as much as possible of the information to be gained hereafter, from the recorders or residents of the district, to replace that lost in the Colorado.

List of Questions.

1. Date of discovery of this district.
2. Has the district been worked at intervals, or continuously, since that time?
3. Name of recorder.
4. Name of postmaster.
5. Name of Wells, Fargo & Co.'s agent.
6. Distance from railroad communication, and nearest practicable route.
7. Description in detail of the geographical boundaries of the district.
8. Position of mining ledges in regard to the main range of mountains in vicinity, *i. e.*, whether in a cañon or along foot-hills; and if the latter, on which slope. Give general trend of mountains in vicinity, as well as that of marked spurs, ridges, and foot-hills.
9. General direction of lodes, deposits, and stratifications.
10. In case there are any real or supposititious fissure-veins, or others of a permanent character, name the wall-rock, direction of the slopes, and planes of the hanging and foot-walls of the vein at different levels, and items of evidence of the existence of a permanent or regular vein. Amount and location of timber, wood, and water; this latter description in detail.
11. Geological age of the rocks in the vicinity of the mineral developments and their mineralogical characteristics. The nature and quantity of fossils, if any are found in the country rock.
12. Nature of ores in vicinity, *i. e.*, whether they are worked by free or wet, roasting or smelting process, and average yield per ton.
13. Gross annual production of bullion from the mines, as well as that for each month of the year since the beginning, giving also the number of tons worked, as near as may be.
14. Average cost per ton for mining the ore.
15. Average cost per ton for milling the ore.
16. Average cost per ton for roasting the ore.
17. Average cost of mining labor, per diem.
18. Average cost of milling labor, per diem.
19. Cost of grain and hay; facilities for raising farm produce, stock, &c.
20. Number of mills and description of each, with the cost of, and amount of ore that each can work; this should give the weight of stamps and number of drops per minute, size of engine, number of boilers, number of pans and settlers, amalgamation process, and cold or hot straining of amalgam.
21. The principal mines now worked, with the description of each in detail.
22. Amount expended in the mineral development of any of the principal veins, and probable amount of bullion extracted from the same.
23. Number of inhabitants of the district.
24. Number of freight or stage lines.
25. Price of freight and passage from railroad.

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26. Number of churches, school-houses, banking-houses, stores, &c.
27. Cost at the present time of a 10-stamp mill, with or without a Stedefeldt or other roasting furnace, also of an ordinary smelting furnace, in this district; this should itemize first cost of machinery, transportation to mill, and construction account.
28. Average amount of ore that can be stoped by one man in one day.
29. Average amount of ore that can be extracted by one man in one day.
30. Whether tunnels should be run in vein matter or in the country rock.
31. Average cost per foot for running a tunnel on main veins.
32. Average cost per foot for sinking a shaft on main veins.
33. Average cost per foot for running a drift on a main vein.
34. As nearly as may be, the exact area in the district covered by the mineral croppings and developments, giving area in acres, shape of area and trend of longer axis.
35. State as near as may be the real or supposititious water-level in the veins, and if the water-level has been reached, state whether there has been a change in the nature of the ore.
36. Is there any economical building-stone in the locality?
37. Are there any indications of coal in the neighborhood, or have any been reported?
38. How many head of stock in the vicinity, and are more coming in?
39. What kinds of game are found?
40. Nature of roads.
41. Names of Indian tribes, number of Indians, men, women, and children.
42. Do assays show the presence of gold in any of the silver-bearing ores in the district?
43. Procure copy of the mining laws of the district.
44. Chances for a decrease in the expense of any of the items incurred in mining industry.
45. Any proposition relative to a change in the mining laws, that shall give more certainty to the final acquirement of title and prevent chances of "jumping" and litigation.

In view of the present condition of the data in this matter, it seems proper to confine this report to circumstances concerning the locality of the various districts, the general character of the ores, the nature of the inclosing and country rock, the prospect of permanency in the veins, &c., and close the subject with a few suggestions and recommendations. Mr. Gilbert alone presents geological notes.

DISTRICTS IN NEVADA.

These will be mentioned sensibly in their order from north to south. Many of these districts are not new, having their place in reports already made and published, but, coming within the lines of the routes traversed, were always entered when opportunity occurred, with a view to record any change in the condition of the mining industry at the date of our visit.

The reports to which the above reference is made are those of the United States Commissioner of Mining Statistics, Vol. III of the Fortieth Parallel Geological Survey, and those of the State mineralogist of Nevada.

Bull Run District, Nevada.

White Rock City, the principal location in this district, and the only one that is now active, is eighty-nine miles north from Carlin, on the Central Pacific Railroad. The connecting wagon-road, which is of fair quality, follows Maggie's Creek and Independence Valley. The Bull Run Range has a north and south trend, and forms the eastern limit of the broad valley of the Owyhee. At the point in question it consists chiefly of (1) a bluish-gray, bastard limestone, somewhat altered, checked by frequent veins of calcite running at all angles; (2) gray, impure quartzite, passing on the one hand into argillaceous schist, and on the other into impure sandstone, resting against (3) a gray, homogeneous, syenitic granite. The granite is seen along the western foot of the range, and in ascending to the divide one crosses the edges of the stratified beds, which rest against it, and dip at 30° to 60° to the east. A system of fissure veins substantially conforming to the dip and trend of the strata, traverses all the metamorphic beds, and even the granite, but is metalliferous only in the former. The metal

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mined is silver, and its principal associate is lead. So far as wrought, the veins have afforded chiefly oxidized ores, but some sulphides have been found, though the water-line has not yet been reached. There are no mills, and the ore is packed on mules to Cope district for reduction.

The principal mines in operation are the Central Pacific, Porter, and Town Treasure. The number of men employed is small, and the entire population does not exceed fifteen; the mines are comprised in an area two miles north and south by one mile east and west. There are no stage or freight lines. The best available building material is timber, with which White Rock Cañon is well supplied. Water for mill use is at hand, and at the cañon of Bull Run Creek, a few miles farther south, is an available mill-site, with water-power.*

A hurried personal visit was made to this locality, not so much, however, to examine the mines as to cross the divide of the waters of the Humboldt and Columbia Basins, and gain a look along the valley of the Owyhee, which observation alone paid for a long ride of nearly two hundred miles. The heavy snow on the mountains had not disappeared, and evidently the miners were waiting for the opening of the spring in order to commence vigorous work. Samples of ore, both chloride and sulphide, looked very promising, so far as this alone could show. The majority of the ores require roasting, and hence that heavy weight of expense per ton must act here, as it has so often in other regions, as an incubus to speedy developments. These mines had been opened but little at this date; however, it has since been understood that arrangements have been completed to bring in machinery, and, if the ore developments have kept pace, good test evidence will already have been furnished of what may be expected of this mining camp.

Poor placers have been found in the little basin to the eastward of the main range, but they have been abandoned as unprofitable. Similar placers, it is understood, have been slightly worked in the neighborhood of the mines at Cope district.

*Cope District, Nevada.**

Discovered in 1869. Worked continuously since that interval. From Mountain City, the only mining camp in the district, to Elko, via the stage-road, the distance is ninety miles.

The ores are principally sulphurets. Fuel for roasting is abundant, at convenient places. Mining labor costs here $4.50 per day. There have been two large mills erected here, extracting some bullion.

The principal mines worked in June, 1871, are as follows: Mountain City, Pride of the West, Argenta, Excelsior, Independent, U. S. Grant, Eldorado, Crescent, Idaho, Nevada, Emmett, and Saint Nicholas. A study of names on the recorder's books of the many mining districts, furnishes much of an index to the character of the miners and prospectors, who often place no little stress and pride upon the names selected with so much solicitude. Number of residents, about four hundred and fifty; one freight and one stage line to Elko. The country roads are good in this vicinity. The Shoshone Indians inhabit this locality, catching many salmon for themselves and the miners during the season. One of the forks of the head-waters of the Orwyhee traverses this district. It is believed that many of the late developments do not favor the idea of permanency, although the present stage of the opening of the mines is not sufficiently advanced to warrant a definite conclusion.

Notes from J. W. Drew, late United States Army, give an altitude of 5,800 feet to the camp; also, average of temperatures, maximum and minimum, as occurring in July and December, former 84°, 21 F., latter 20°, 45 F. Snow liable to fall any time between November 1 and April 30.

Lone Mountain District, Nevada.

Situated in a rather isolated comb-shaped range, this district lies to the east of the head of Maggie Creek, and about forty-five miles from Carlin,

* From notes furnished by Mr. G. K. Gilbert.
† From notes furnished by Mr. F. R. Simonton.

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on the Central Pacific Railroad; it is more approachable, however, from Elko, Nevada, via the stage-road to Cope district. The district was only visited by a topographical party. Very little work has been done on the mines, and but little prospecting even, in this locality. The majority of the ledges are noted as occurring on the eastern slope of the mountains. Some later prospects have been found on the western side, carrying argentiferous galena and carbonate ores, well charged with iron as both coloring and matrix matter. The specimens gathered from mines on the eastern side show galena and poor sulphuret ore, carrying considerable carbonate of copper. There is evidently a field for intelligent prospecting in this vicinity.

*Tuscarora District, Nevada.**

The Tuscarora placer mines are on the southward slope of hills of rhyolite, facing Independence Valley, and are fifty-six miles by road, north from Carlin Station. The dirt is derived from subjacent rock, and covers it to but a small depth in the gulches—5 to 10 feet. The gold has the same origin, and can be obtained in small quantity from the parent rock. Some spots showed so much as to induce the erection of a ten-stamp mill; but the amount extracted was not remunerative, and the mill is idle; there are no veins. The dirt is washed in sluices, with water brought two to six miles, the supply availing but three or four months. The gold is combined with silver, and brings $12 to $13 per ounce. The diggings occupy a belt one-half mile by two miles. Most of the miners are Chinamen, working in companies. Population about one hundred and twenty-five. There is no timber convenient.

Railroad District, Nevada.

This district, situated south of Carlin, on the Central Pacific Railroad, and at a distance of twenty-one miles, was visited by a topographical party. Specimens collected. The notes are wanting. The district was established in June, 1870. The ores are very base, and should be more properly termed copper ores. They, however, carry average assays of silver, and in consequence of their proximity to the railroad, with which they are now connected by three good mountain roads, some, at least, of these properties will be profitably worked.

Mineral Hill District, Nevada.

Discovered in June, 1869. It has been worked nearly continuously since that time.

A stage-line connects with Palisades on Central Pacific Railroad about thirty-one miles distant. The ledges are principally on the northwestern side of a conical-shaped hill, being an outlier to the west from the main mountains; direction of the mineral veins, northwest and southeast. The development that had taken place at the time of our visit did not show the best of indications for the presence of a permanent vein, but gave more the appearance of pockets in limestone, which exhaust, bringing up in their downward course upon the country rock. However, it is understood that at the White Pine district, after exhausting these basins, frequently others are found by sinking directly or following some mineral thread or discoloration. The ores belong to the base metal order, abounding in sulphurets of silver and lead and carbonate of copper. In order to extract an economic percentage, the roasting process has to be applied. The gross production up to June 1, 1871, or in two years, was $600,000; number of tons, 3,300; cost of mining the ore, per ton, $5; cost of milling the ore, including roasting, per ton, $30; mining and milling labor per diem, $4. There

* From notes furnished by Mr. G. K. Gilbert.

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is one 15-stamp mill with a Stedefeldt furnace erected here at a total cost of $80,000; its capacity is 22 tons in twenty-four hours.

The principal mines worked are the Austin, Mary Ann, Rim Rock, Grant, Star of the West, Vallejo, and Pogonip; upon these mines, with the exception of the Austin, about $80,000 have been expended; returns $450,000; upon the Austin about $50,000 expended, returns so far $150,000. Number of inhabitants four hundred and fifty nearly. One stage and a variety of freight-lines connect with the railroad. Cost of freight 1 cent per pound. Stage fare, $8. The cost of a 10-stamp mill at this locality, with a Stedefeldt furnace, is estimated at $65,000, estimating $13,000 for the furnace; both this and the total amount being liberal estimates. The whole area covered by mineral croppings will hardly exceed one mile square. There is at present no indication of reaching a water-level. A species of natural fire-stone, valuable for the lining of the furnace, is found not far distant. Water is obtained in limited quantities in a cañon to the north and east, along which the little mining town has been built. Wood is not plenty in the immediate vicinity, though large tracts are in view upon the sides of the mountains to the north and east. The Shoshones inhabit this region, and work to a limited extent for the miners. The country roads in this vicinity are solid. When the local tariffs on the railroad and the price of labor diminish, many items that affect the cost of the extraction of the bullion at this comparatively accessible district will be cheapened. This district was visited by one of the members of the fortieth parallel geological survey. Many new developments have been made since that time.

Diamond District, Nevada.

(Visited by a topographical party. Results from a few scattering notes.)

Situated on the western slope of the Diamond Range, north and west from Diamond Station on the old overland stage-road. Diamond City is the name of the little camp. The Mammoth mine has been well opened by a shaft, now more than 75 feet. The elevation at the mouth of this shaft is 7,740 feet. The ore is principally argentiferous galena, giving assays as high as $270 per ton, and carrying 72 per cent. of lead. Veins run north and south, crossing an east and west stratified rock, about one and one-half miles in width. A smelting-furnace, soon to be in operation, was being built. The original locator having wasted some money in improvements, abandoned afterward their claims. The principal locations are the Champion, Hidden Treasure, Patriot, Curtis, and Keller. The location of these mines in regard to the railroad and the high percentage of silver, ought to establish profitable enterprises in this district if the mines are systematically worked.

Racine District, Nevada.

(From scattering notes by a topographical party.)

Situated about forty-five miles from Elko, on the western slope of the Humboldt Range, and east of Dutchman's Station on the White Pine stage-road. All the appurtenances for a mining camp are here abundant. Very little development made, and this only upon two mines—the Uncle Sam and De Witt. Elevation of mines, 7,440 feet; specimens, show several varieties of base silver ores, and are all from the croppings. A little legitimate prospecting may find surface indications to warrant the investment of a certain amount of capital to determine the character of this area of mineral land.

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Eureka District, Nevada.

This district lies on the stage-road from Palisades, on Central Pacific Railroad, to Hamilton, White Pine County, seventy-nine miles distant from the former station. The mines were first discovered in 1868, worked for a period, and then partially abandoned, after which in the spring of 1870 developments were going on in full vigor. Seven furnaces were in operation, the most successful one at this time being that of the Eureka Consolidated Company. The mineral croppings of this region are strewn over a considerable space, with but little regularity of form. The lead-bearing ores predominate, while on the western slopes of the rolling mountains that face toward the southern end of Diamond Valley, milling ores are found, of both sulphide and chloride of silver, in limestone, however, and having no remarkable appearance of permanence. The ore that produces the best results from the smelting has a brownish, decomposed look, carrying much carbonaceous matter, and oftentimes not lead enough to facilitate the smelting process. The ore-beds defined seem to have a dip to the northeast of about 30°, following wavy beds quite similar to what has been noticed in disturbed coal basins. The principal mines worked are those of the Eureka Consolidated Company, embracing one entire hill, joined at the southeast by properties of the Phœnix and Jackson Companies, the latter idle. Outside from these the Bull Whacker, Otto, Empire, and Lexington mines were visited, and samples of milling ores were taken from the Star of the West and General Lee. Various freight lines deliver stores for 1 cent per pound from railroad. The area covered by mines is most irregular in shape, but will approximate to eleven square miles. A volcanic granite quarry to the east of the town furnishes a fine quality of building material. Wood for charcoal is abundant among the hills, bordering a radius of eight to ten miles. No records on hand at present give the annual production of bullion. The amount from the Ely Consolidated, running five furnaces, has often reached, if not exceeded, $175,000 per month. The present price for freight on bullion is $10 per ton, to the railroad. Several freight lines compete. The town of Eureka is a very lively and smoky one; several hotels, one church, one bank, and one school-house are found here. The Richmond furnace is the only one that has a refinery attached.

Sierra or Secret Cañon District, Nevada.

(Notes from a topographical party.)

Situated south and east from Eureka, about twelve miles distant. Rich cropping found and several mines worked with great success. From the Geddis mines, Nos. 3 and 4, ore taken from a shaft over 70 feet in depth has milled an average of $225—rich bodies bringing out results very much superior to this. The Calico mine has a shaft of 75 feet showing average milling ore of $100. Shafts have also been sunk to good depths on the Bertram, and Geddis Nos. 1 and 2, Secret Valley, Stockton, and some others. The district, though small and comparatively new, has an air of good promise.

The cost of the various items pertaining to mining industry varies but little if any from that at Eureka, near at hand.

Pinto District, Nevada.

(Notes from a topographical party.)

This little mining camp is situated at the entrance to a wide cañon on the eastern slope of the Diamond Range, among the foot-hills of which

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the mines are located, lying in a southeasterly direction, and not far from Eureka. Specimens obtained were from the Maryland mine; others forwarded from this district have not been received for examination, but are taken from the Mountain Chief, Michigan, Uncle Sam, Duquette, Cole & Johnson, and Our Own, No. 2, mines. The ores are chlorides and sulphurets of silver, with galena interspersed; a part can be smelted; it is maintained that others can be worked by the wet or free process; course of veins northeast and southwest.

Water is scarce, and at a distance from the mines. Wood for fuel purposes plenty. The several expenses of mining industry vary but slightly from those obtained in Eureka.

Morey District, Nevada.

The mines of this district are north of Hot Creek, the camp itself lying to the south of Eureka, a distance of seventy-five miles, and south and west from Hamilton, at a distance of sixty-one miles. The ledges are arranged in a parallel system of thin fissures, found in the foot-hills, whose trend is south 55° west magnetic, and which form a portion of the eastern slope of the Hot Creek Range. The mines are found on either side of these hills, near uniformly in direction, converging slightly to the main peak of the contiguous ridge; these foot-hills break off to the northeast from the main range. General trend of the mountains north and south. The country rock is somewhat disturbed, and much *débris* from the peaks to the southwest covers the surface. Bearing of lodes south 55° west; country rock is an ancient volcanic rock, probably propylite, with later-introduced volcanic dikes. The veins have an average dip of 60°. No vein has been found to exhaust either in horizontal or vertical working. Some veins are perpendicular. Plenty of nut-pine and cedar for fuel and timbering in adjoining hills; fine building-stone in cañon one and a half miles to the south; three springs of fine water in the district. The ores are all high grades, associated with manganese, and require roasting. The Stedefeldt process has been found to give a high percentage at Austin. Average cost of mining per ton, $25; price of mining and milling labor, $4. As yet there is no mill, although the developments justly merit one.

Principal mines worked: Magnolia, Bay State, Cedar, and American Eagle. Total amount of bullion for nine months, ending June 30, 1871, $27,500, giving an average of $315 per ton. Freight to Austin, 3½ cents; to Eureka this might be reduced to 2 cents. The cost of a 10-stamp mill and Stedefeldt furnace is estimated at $45,000; this is a low estimate. The ore from these mines has been transported to Austin at a great expense and there worked; meanwhile the district has been self-supporting to the Morey Company, they being the only ones who have done much work. In their case, however, it has been conducted on a very small scale. The total number of feet owned by them is 20,400; this embraces the greater share of the district, which is quite small. The matrix material of the veins is soft. The introduction of Chinese labor succeeded satisfactorily at this point while it was tried by Mr. D. S. Ogden, the superintendent, and was only discontinued at the time it was concluded to lessen operations.

This labor ought to be introduced to a certain limited extent among the mines of the interior, where cheap labor is so much needed. By arranging them in small gangs, placing over each an intelligent and vigilant foreman, the work can be equally as well done. They also succeed well as assorters of ore. The veins are from 3½ to 5 feet thick,

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showing a pay-streak from 6 to 22 inches, and giving assays from $75 to $525. Work was being pushed ahead on the Cedar and Magnolia at the date of our visit, and from the latter the most flattering results obtained at the end of the tunnel, 155 feet, ore from a pay-streak from 18 inches to 2½ feet was continuously averaging from $150 to $200 per ton, and often reaching as high as $600.

The Bay State, Mount Airy, American Eagle, and Black Hawk are all good mines. The average milling results, after little assorting, average from $395 to $552 per ton. Quite thorough examinations were made here, and the impressions produced were exceedingly favorable; indeed, there are few localities yet encountered where there is a more favorable opportunity for the judicious expenditure of capital.

White Pine District, Nevada.

No examinations made here since 1869, subsequent to which visit there was a great lull in mining matters; latterly, however, the prospects have greatly revived; mines have been found to descend where alone pockets were expected; capital has been introduced on a large and liberal scale. I am informed that the charter has been granted and the incorporation perfected for a narrow-gauge railroad from Elko to Hamilton, and that work is soon to be commenced. A wire tramway for transporting the ore from the mine to the mill at a trifling expense is in operation, and at last accounts was working successfully. This is the first instance in which this method of transporting the ores has been tried; various experiments are going on with a view to perfect this sort of a tramway, and the results cannot fail to be a step in the right direction.

Spring Valley District, Nevada.

This district is situated immediately north of the stage-road from Austin to Eureka and about twelve miles from the latter place. The ores are chlorides and sulphides of silver in metamorphic limestone, showing croppings of a limited size. But little labor has been applied, and beyond generalizations of the widest nature, but little can be said. Most of the miners were absent and the time for observation short. The mines lay in the southeastern foot-hills, covered with nut pine. Water is scarce. The country roads are good.

Antelope District, Nevada.

Situated about fourteen miles in a southwest direction from Mineral Hill. Base metal ore in a highly metamorphic limestone formation. No developments showing expectations even of a permanent vein. The croppings are distributed over a considerable area among low, rolling hills, on the western slope of a range that passes nearly due south from Mineral Hill. Water scarce; wood plenty. A few miners at work.

Hot Creek and Empire Districts.

Situated in the Hot Creek Range, and successively to the south and adjoining Morey. These localities were visited by topographical parties, but no notes are available except the average milling assays of the ores from the Hot Creek district at the Old Dominion mill, when this was in operation. These were very favorable, in no month falling below $200 per ton, and reaching as high as $325 per ton. The mines are on the

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eastern slope of the range, and crop from a volcanic formation. A transcript from the mill returns of the Old Dominion mill shows the average working value per ton to range from $80 to $472.

Rattlesnake Cañon District, Nevada.

South of Empire, adjoining it, and now believed to be a part of it, is being worked by a New York company, whose principal endeavors have attached to the Philadelphia mine; showing roasting ores, stedefeldtite predominating. The ore deposits are in volcanic rock. The water-level had been reached, and arrangements were soon to be made for pumping, when it was intended to push the work on with vigor. The walls, at a depth of 55 feet, were clean and well defined. Water sufficient for mining purposes. Wood scarce. No mill in the cañon. A 2-stamp mill in sight in the valley below.

Tyboe District, Nevada.

The little mining camp of this name is situated in a canoñ that runs toward the Hot Creek Valley, and from the mountains between the Rattlesnake Cañon and the old Milk Spring district. This district shows two very dissimilar series of ores. The first, prominent along a very long line of east and west croppings, is of a yellowish-brown ore, heavily charged with lead, assaying about $60 per ton in silver, and, like the Eureka ores, can doubtless be easily smelted. The ores from the west, and in the direction of the Empire Cañon, show sulphide and chloride of silver in limestone, and also among volcanic rocks. The first series belong to a line of fissure; the others have no particular direction, and doubtless are pockets for the greater part. The veins of the carbonaceous ores are wide. Several miners were vigorously at work; wood and water sufficient for mining purposes. The most direct access to this locality is via Eureka, and thence down Hot Creek Valley. The distance from Hot Creek Station is fourteen miles. But few developments had been made. The principal work has been done on the 2 G, Casket and Western Extension mines. The district is, however, in my mind, one of great promise, if developments prove that it can be worked on a large and comprehensive scale. The direction of the veins trends toward the summit of the range. The nearest milling center at present is Belmont. Plenty of wood for fuel purposes. Roads are not yet well opened.

*Battle Mountain District, Nevada.**

The district includes four principal locations, known as Battle Mountain, Trenton, Galena, and Copper Cañon, all on the eastern slope of the Battle Mountain Range. The first mentioned, which is the oldest, I did not visit. Galena, five miles farther south, is now the principal center of activity; it is situated fourteen miles south from Battle Mountain Station, with which it is connected by a good road. The country rocks are metamorphic sedimentary, (quartzite, mica-slate, clay-slate, limestone, &c.,) dipping to the west at all angles, from 20° to 75°. The veins are well defined, and for the most part are more nearly vertical than the adjacent beds, but trend with them north and south.

The chief ore is argentiferous galena, and some mines have passed below the water-level; others are still dry and yield a large proportion of oxidized ores. Price of labor, $3.50 *per diem*. No mill was in operation at the time of my visit, but that of the Nevada Butte Silver Mining Company approached completion. The best ore ($150 to $300 per ton) is shipped to San Francisco.

The principal mines worked are the Avalanche, Buena Vista, Butte, Trinity, and White, and they are comprised in an area about one and one-half miles square. Population, 200.

* From notes furnished by Mr. G. K. Gilbert.

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The mines of Copper Cañon (the Virgin and Lake Superior) lie three miles farther south, and are worked entirely for copper. The surface ores are carbonate of copper and red oxide, and the deep-seated copper glance. The water-level has not been reached. The ore is sold in Liverpool.

Galena and Copper Cañon have a scant supply of water, and have no timber in the immediate vicinity, though it is found on the range.

*Yankee Blade District, Nevada.**

Situated immediately north of the Reese River district. It is reported at Austin that work has been entirely suspended in this district.

*Reese River District, Nevada.**

There are no new developments at Austin, but by economic and skillful management, the place is recovering from the stagnation that followed the White Pine excitement. The mill of the Manhattan Company, which now does a large custom business in addition to the reduction of the ores mined by the company, is to be enlarged, and another mill is building to reduce, by competition, the prices of milling, and foster still further the development of mines held by parties with small capital. Great advantage is derived in the large mines from the use of a contract system, which pays the miners in whole or part by a percentage of the ore extracted.

*Kingston District, Nevada.**

Situated on the eastern flank of the Toyabe Range, twenty miles south of Austin. The silver mines of the district are entirely deserted, and the machinery of its mill is being removed.

*North Twin River District, Nevada.**

Situated on the eastern flank of the Toyabe Range, facing Smoky Valley, and thirty-five miles south of Austin. The great speculations that have been based on this district are without fulfillment. In Summit Cañon, two men are said to be at work, and at the entrance of Park Cañon, where stands an unfinished silver-reducing mill, the proprietor still faithfully maintains his residence.

*Twin River District, Nevada.**

Situated immediately south of North Twin River district, and including Twin River, Last Chance, Ophir, and Wisconsin Cañons. In Ophir Cañon the extensive works of the Twin River Silver Mining Company stand idle, the celebrated Murphy mine is full of water, and the town, once containing several hundred, has now but five or six inhabitants, two of whom are engaged in mining. The other cañons are quite deserted.

*Jefferson District, Nevada.**

This district of silver mines is situated on the west side of the Toquima Mountains, being separated by that range from the Silver Bend District, (Belmont,) and by the Smoky Valley from the Twin River District, (Ophir Cañon.) It is entirely deserted.

*Manhattan District, Nevada.**

This district, now abandoned, was located on the west side of the Toquima Mountains, immediately south of the Jefferson district.

Mountain Chief District, Nevada.

This district, visited by a topographical party, lies on the eastern slope of the Toquima Range, and nearly due north from our camp at Meadow Creek Cañon. Principal mines: Mountain Chief, Mount Ruby, and Blue Point; no notes available.

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Silver Bend District, Nevada.

Belmont stands on a system of plicated black shales of silurian age, with some associated limestone and quartzite, all dipping east and northeast at high angles, and resting against a mass of granite that lies west and south of them. The argentiferous veins are near the granite, and dip and trend with the strata.*

Quite a minute survey and examination were made in this locality by members of the fortieth parallel geological survey, and there is little left to be done beyond chronicling changes in the material developments of the mines that have since taken place. Nothing has been done with the mining or mill property of the combination company. Mr. Canfield had in constant operation a 10-stamp mill, with furnace and crushers, working upon ores from the Arizona and Transylvania mines, and paying a good profit.

The owners of the El Dorado south were busily engaged in a legitimate development of their mine down to the water-level, which shows at this point a most beautiful fissure vein.

The old Belmont mill, situated in the town of Belmont, was receiving a thorough overhauling, preparatory to receiving new furnaces and machinery. The ore supply was expected to come from explorations that had commenced on the Transylvania north, and upon the old Belmont lead.

The Monitor, in the bight of the hill near the summit, and lying nearly in a line between the Arizona and El Dorado south shafts, was taking out fine, high-grade ore. Other parties, here and there, were prospecting their leads in a small way.

To the north and west of the town, and in the continuation of the mineral-bearing trend, some mines were visited. At one of them a little work is progressing. They doubtless belong to the same system of mineral deposition.

Mining and milling labor commands $3.50 per day. There are sixty stamps set up in this district, only ten of which were working.

Two freight lines connect with Austin. Number of inhabitants, 400.

There is said to have been taken out, in bullion, from the High Bridge, $170,000; El Dorado, $200,000, and Transylvania, $250,000. During the last year the bullion from the Arizona has increased the above amount, so that probably the district in total has produced not far from $750,000. The veins here are undoubtedly permanent. The range of the properties is limited. Developments become exceedingly expensive after reaching the water-level.

By the judicious combination of interests and application of capital this could be made one of the most flourishing districts in the interior of Nevada. The original name of this district was Silver Bend, then it was temporarily called Philadelphia; at present the record-books show "Silver Bend" to be the appropriate name.

*Reveille District, Nevada.**

Reveille district, organized in 1856, is on the Reveille Range, two hundred and twenty miles south, by road, from Elko, on the Central Pacific railroad. The mountains are here composed of heavy beds of lime and quartzite, uplifted and shattered by massive eruptions of rhyolitic lava. Silver ore has been found at numerous points in the surface of the limestone, with a calcareo-siliceous gangue, but no traceable vein has been demonstrated, except along the uneven margin of the rhyolite, where it is adjacent to the limestone. The base metals are iron, copper, lead, and antimony. No deep mining has been done, but a notable amount of superficial work. A mill for the district was built twelve miles west, at the foot of the Hot Creek Range, but it is not now used, and the district is quiescent. The supplies of water and timber are scant

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Freiberg District, Nevada.

This was formerly known as the Worthington district, and it is situated northwest from Silver Cañon, about seventeen miles distant. The ores are represented as rich smelting ores. The notes taken by C. A. Ogden are not now available. It is understood that the main mountains are of limestone, highly fossiliferous, covered on their eastern flanks by eruptive beds of rhyolite.

The deposits occur on the eastern base, cutting across the ravines that are parallel with the northeast spurs. Water in two places for mills; timber sufficient for fuel and building purposes. The area covered by croppings is about 2½ square miles.

Ely District, Nevada.

The range, or group of hills occupied by the district, stands as an island on the eastern foot-slopes of the Ely Mountain Range, and is quite as peculiar in structure as in position, since its axis of elevation and the accompanying fractures trend north 60° west, and the system of argentiferous veins east and west, nearly at right angles to the general trend of the Cordilleras. The rocks are slightly altered limestone and argillaceous shale, with vitreous sandstone or quartzite. At Pioche the latter stretches as a longitudinal belt, a half mile in width, with an easy dip to the northeast, and is separated by faults from bodies of limestone and shale on either side, through which it seems to have been uplifted. The metalliferous veins are confined to this belt. In the shale a few fossils were found, one of which I thought to be a Carboniferous form, (*Phillipsia,*) but, as the specimens were afterward destroyed, it has been impossible to confirm this identification.*

This district, first discovered in 1864, was relocated, and developments commenced in 1868. A visit was made here in the fall of 1868, since which time astonishing developments have been made, and Pioche ranks second to no mineral section in Nevada, except Washoe. Fifty-five stamps were busily employed, the ore being worked by what is known as the wet process, giving a fair percentage; the tailings are collected, however, and will be reworked at some later period. Only the higher grade ores are carried to the mill at the present stage of the mining industry. Water being very scarce in the mines, the mills have had to be erected, one in Dry Valley, about eight miles to the eastward, others at Bullionville, eleven miles to the south. The present cost of transportation of ores from the mine to the mill is somewhat of a burden. The wall-rock is quartzite, badly broken and disturbed in many places; the ores found are chloride and sulphuret of silver. Specimens of horn and ruby silver, stedefeldtite, argentiferous galena, small amounts of manganate of silver, oxide and carbonate of lead, and pyrites of iron. The lower levels have a tendency toward sulphuret ores, and it is not unlikely that, at no distant date, in order to secure a sufficiently high percentage, roasting will have to be introduced.

The main veins occupy but a small lateral extension, separating, a short distance from the western end, into two branches or prongs, or, looking from the other extremity, these prongs uniting ought to lead to a wide and more substantial vein to the westward.

Astonishing results have been obtained from the (Lightener) shaft, sunk on the Raymond and Ely property in this direction, $750,000 having been taken out, at a profit to the stockholders of more than $450,000 in four months. The principal companies are the Meadow Valley, Raymond and Ely, and Pioche. Other parties have lately made developments, some of which are reported as of good promise.

This district was the scene of considerable terror and bloodshed for

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quite a season, caused by the disputes and litigations arising from frequent "jumping" of claims. Much of the blackmailing spirit has held sway, and may be cited as an instance of the loose state in which mining laws, records, titles, &c., are often placed, incident upon the irregular method of the prospecting, locating, and placing in market of mines in interior and remote sections.

The little town of Pioche, in July, 1871, was as thriving, cleanly, and well-regulated a mining town as it has been in my experience to meet. A fire, in August, destroyed nearly everything, and left the surface of the country more desolate than before the mines were worked; since that time the enterprise that is evinced in all mining camps where bullion is produced has put together a new town of as respectable proportions as the former.

Several boxes of valuable fossils, and collections in natural history, *en route*, were destroyed in this fire.

Highland District, Nevada.

This lies to the west of Pioche, Nevada, and is understood to be in a limestone formation. Most promising specimens of ore from this locality were seen. It is believed that there are some good properties here. It is understood that a 30-stamp mill is about to be erected. The notes taken by a topographical party are not at hand.

Blind Mountain District Nevada.

North and west from the Highland, carrying base metal ores; little prospected, and very little work being done. Mining laws very good; plenty of wood, but water scanty. Notes from a topographical party not at hand.

Cedar District, Nevada.

This district was discovered in 1871, and lies on the western side of Bennett Spring Mountains, and nearly due east from Pahranagat Lake. Most of the assays, so far as could be found out, showed only a low grade silver ore. The locality was not visited from want of time.

Pahranagat Lake District, Nevada.

Great Quartz Mountain is a mass of uplifted and somewhat altered strata, with a general dip to the west. The quartzite, 500 to 600 feet thick, that caps the ridge, are of slight inclination, exposing their edges on both sides of the mountain, and they contain an interstratified bed of black limestone. Below them is an almost uninterrupted exposure of limestone, to the eastern base of the mountain, and in these are the mines. They are so much disturbed and faulted that the thickness of the mass cannot be definitely ascertained, but it can hardly be less than 2,000 feet. The limestones are profusely fossiliferous, and belong to the Hudson River and Trenton groups of the Silurian system.*

The district of Pahranagat Lake, once the scene of great activity and excitement, is now comparatively deserted, except by a few persons known as "chloriders," who here and there coyote little pockets of rich ore, and take it to the Crescent mill, where it can be worked by the wet process.

The mill of the Hyko Silver Mining Company, who at one time spent their money here in so princely a manner, although well appurtenanced in every particular, now stands idle; though why, it is difficult to say.

* From notes furnished by Mr. G. K. Gilbert.

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From a careful examination of this district, the presence of a great deal of surface mineral has been definitely determined; it has also been found out that former labors have been directed independent of sense or judgment.

The metamorphic limestone is greatly disturbed, and the tracing of the veins through it is very difficult. In the northern part of the district, spread over a considerable area, and cropping from the quartzite, other portions of this apparently large mineral deposit are found. It seems patent that success alone is to come from this portion of the extensive property, and it is my belief that no permanent and remunerative vein will be opened in the district until the croppings in the quartzite are tried. Verifying this opinion, formed while in the district, a shaft has been sunk in this locality, and good results obtained, although it had not reached over seventy feet at the date of the information.

It is rumored that the New York company are soon to resume operations, and Pahranagat may yet add its history to that of the mining centers of the West. A bed of volcanic tufa at Logan Spring can furnish very superior building-stone.

Tim-pah-ute District, Nevada,

This district lies nearly due west from Silver Cañon, occupying the southwestern end of a detached range, similar to the Worthington Range. The eastern limit of the mineral-bearing zone is highly metamorphosed slate, with north and south stratification, parallel to which, and protruding through limestone, the country rock is a parallel quartzite dike, extending laterally for miles. Most of the leads are found between the quartzite and the slate, although stringers and seams of the ore are in the quartzite. It was supposed at one time that there was an immense vein of ore through the district, and that the Inca lode was this mother vein. Very few developments had been made to determine this, however, and nothing certain has been shown beyond a few narrow and rich leads. Several miners are laboring with a laudable vivacity, and it is hoped that their endeavors will be happily rewarded. Most of the miners are poor, and capital is sadly needed among the many forbidding localities in which mines are found. The ores average high grade, and considerable bullion has already been produced at the Crescent Mill and at Hyko.

Groom District, Nevada.

The rocks are sedimentary, and comprise a series of thin bedded, vitreous, red sandstone, overlaid by a mass of soft, argillaceous and chloritic shales, succeeded in turn by massive gray and black limestones. These all trend north and south with the general course of the range, and dip to the east at an average angle of 30°. The several strata are to be seen, in the order named, by crossing the range from west to east, the sandstones and limestones, in virtue of their superior hardness, standing in bold ridges on either side of the eroded shale. By a succession of vertical faults carrying down the more easterly beds, the minor features are several times repeated, and the superficial width of the several members increased.

Parallel with this system of faults, and within the shales, are the metalliferous deposits. Interstratified with the same shales are a few feet of limestone containing fossils of the Potsdam epoch. This is, I believe, the first recorded occurrence in the great basin of argentiferous veins in primordial rocks.*

This is an argentiferous galena district, and is situated south and west from Tim-pah-ute Peak. The mines occur in a system of parallel veins or deposits, from 75 to 200 feet wide, and show large amounts of ore. The galena is bright and lustrous, and carries in its composition little or no fluxing agent.

* From notes furnished by Mr. G. K. Gilbert.

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The surrounding hills are covered with nut-pine and cedar. The ores are of low grade, but the resulting lead should be of economic value. These ores will have to pass through a scorifying process before they can be introduced into a blast-furnace, and need, in connection, some fluxing agent. Whether nature has furnished that in the near vicinity has not yet been determined. Should this be found, and thorough proof adduced that the problem of smelting these ores can be solved on the ground, there seems to be no reason why, if this district were operated on a large scale, it should not be equally as profitable as the mines of Cerro Gordo. Cost of mining, $2 per ton. Mining labor, $4 per day. About $7,000 have been expended on the mines, developing continuance to 50 feet in depth.

*Southeastern District, Nevada.**

Work, on a small scale, has been carried on at intervals in this district since its discovery, in the spring of 1870. The nearest water is to the northwest about twelve miles. The situation of the mines is to the southeast from Timpahute Peak, in a cañon on the western slope of the northern end of the Vegas Range. Veins have appearance of permanency; ores of low grade. Ores are base, the principally associated metal being copper. Plenty of wood for mining purposes.

Waucora District, California.

This district is nearly due east from Camp Independence about twenty-two miles, and on the eastern slope of the Inyo Range.

The mines were not examined by any members of the party; however, from the specimens and description, I am led to believe that they resemble, to a certain extent, those at Cerro Gordo that have been made so profitable. They are of argentiferous galena principally, some indifferent silver rock being exposed in places. But little work has been done so far. Wood and water are plenty. These mines may probably be made remunerative if worked on an extensive scale.

San Antonio District, Nevada.†

We left San Antonio on the following morning, (July 5,) and traveled in a southeasterly direction for about nine miles. The soil at first was sandy, with "sage bushes" growing in abundance. When we had gone about six miles the soil became more barren and the vegetation scant. Here we came across volcanic ashes, with large quantities of fragments of agate, silicified wood, and lava. In the spring of 1864 J. P. Cortez & Co. opened the first mine, soon after which the district was formed. This mine was the La Libertad, which was soon followed by the Potomac, the Merrimac, and the Lea; and the whole number of claims in the district numbered about two hundred and fifty. San Lorenzo, or the old Potomac Camp, is a small, deserted village among a series of hills in a small valley, altitude 6,600 feet, (aneroid barometer 57.) We went southward in this small valley, in a gradual ascent, for about three-fourths of a mile, then descended again for the same distance to the Potomac. The general stratification of all the rocks runs northwest and southeast.

The tunnel is in the side of the hill, penetrating the stratifications at nearly a right angle east 40° north, to a depth of 300 feet through quartz.

The ores are cupreous sulphurets, also malachite and films of azurite. About fifty tons of ore have been taken out, averaging, without assorting, $100 per ton. This tunnel was intended to touch or penetrate the Jupiter lode; altitude at mouth of tunnel 6,622 feet. Southeast of this, about 200 yards, is the Merrimac, not worth mentioning.

We now proceeded to the La Libertad, which is the most southern mine of the district. The entrance to the mine is an incline at an angle of 43°, altitude 5,710 feet, to a depth of 500 feet. At 400 feet we came to moist earth, and at a depth of 460 or 475 feet to water, which fills the bottom of the mine. Here we came to a drift running northwest to a distance of 50 feet. The quantity of ore taken out is about 300 tons. Cost of mining, $25 per ton; cost of shipping, $25 per ton; cost of working, $25 per ton. The amount derived since opening, about $100,000, which is not quite equal to the sum expended.

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*From notes furnished by Mr. F. R. Simonton.
†From notes furnished by Dr. W. J. Hoffman.

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*Montezuma District, Nevada.**

(Camp in Big Smoky Valley, July 7, 1871.)

We left camp soon after sunrise for Montezuma, which was but eight miles southwest, on the northern slope of Mount Nagle, in a small ravine. In the valley we were just leaving was a salt marsh, which is separated from the Silver Peak salt marsh by a low divide of volcanic rocks, a continuation of Lone Mountain, with these mountains surrounding Montezuma. This district was discovered May 18, 1867, and was organized on May 24, 1867. The district has been worked constantly since that time. The recorder is Matthew Plunket. The nearest post-office is Silver Peak. The general course of the mining and other ledges is east 35° north and west 35° south. Incline of strata 48°. The High Bridge mine follows down between two strata of metamorphic limestone, in which was embolite, (chloro-bromide of silver,) to a depth of 85 feet. Value from $68 to $200 per ton. Altitude of opening 6,950 feet. South of the town of Montezuma (which consists of six houses, two taverns, and a store, besides one dwelling-house, and a mill) lie the mines on the hill-side. The Savage mine, the most important in the place, has a tunnel of 80 feet depth to a silver-bearing vein, whose dip is at an angle of 40°.

The altitude of mouth of tunnel is 7,010 feet, (aneroid barometer 57.) The ores are embolite, sulphurets, malachite, azurite, (scarce,) selenite, chafazite, and a few of the rare zeolites. The principal mines are the Crocket, Mountain Queen, Brewster, and Osceola. The other mines of importance are the Hubbard, Norfolk, Southern, Light, Burchard, &c. There are about fifty claims in the district, nine of which have been worked at different times. The timber is abundant all over the mountains, but water is taken from wells. There is a 10-stamp mill erected at the camp, (dry stamp,) with a reverberatory furnace. This is also deserted at present. There are a few Indians living in the mountains. They appear to be at peace with all, and are often hired to carry water, wood, and do other work around the mines. Most miners get from $75 to $100 per month, with board. There has been expended in the development of the Crocket $2,500, Mountain Queen $8,000, Brewster $3,000, and Osceola $2,500. The ores are worked at Benton and Columbus.

*Blind Spring District, California.**

This district was organized in the autumn of 1864. Distance from Reno one hundred and eighty-five miles, and Wadsworth one hundred and sixty-five miles. The mountain and ledges run north and south. There is one fissure vein called the Comanche. This has not been sufficiently developed to give entire proof as such. No wood found here, and water occurs only in the valleys, from four to six miles away. The ores are antimoniates of lead and silver, and are extremely rich in silver. The yield for 1871 was $60,000. Cost of mining is $10 per ton; cost of milling and chloridizing, $15 per ton; labor per diem, $4; labor per month, $60, with board.

In the district near Benton is one 4-stamp mill, built at a cost of $4,000. It is run by water-power. This mill can work one and a half tons per day, (of ore.) The principal mines are the Comanche, Rockingham, Diana, and Silver Sprout, also the Wilson Claim, and Cornucopia. Costs of developing the claims are as follows: Comanche, $15,000; Rockingham, $12,000; Diana, $40,000; Wilson Claim, $7,000; Cornucopia, $60,000—not worked now; Silver Sprout, $2,000; Kearsarge, $15,000.

Late advices show a great change in the character of the ores in the Rockingham mine. At the time of visiting this place the water-level had not yet been reached, and the antimoniates of silver abounded exclusively. But upon reaching the water-level, at a depth of about 350 feet, the antimoniates were gradually replaced by the sulphurets, pyrites frequently occurring.

Partzwick has about ten buildings, of which one is a livery-stable, one store, and one liquor store and hotel; number of inhabitants about forty. They are erecting at the northern end of the village a 10-stamp mill, with a stedefeldt furnace with capacity of working 15 tons of ore per day.

Benton is situated about a half mile south of Partzwick, and has—houses, 12; inhabitants, 55; blacksmith's shop, 1; hotel, 1; stores, 2; saloons, 2; livery-stable, 1; school-house, 1; Wells, Fargo & Co.'s office; post-office. Also 1 arrastra mill, (water-power).

*Alida District, Nevada.**

Alida Valley is from one to two miles broad, by about six miles in length. At the extreme eastern part is located the spring, from which issues a fine stream of water. At the summit we just crossed we found a large vein of malachite and black oxide of

* From notes furnished by Dr. W. J. Hoffman.

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copper croppings. The ravines on both sides of the mountain are covered with cedars and pines in abundance, and on the northern side of the mountain we saw two springs of good water. Alida Valley is covered with good grass, and the watercourse is fringed with a dense undergrowth of willows. Here a man named Scott was working a claim which he had discovered. The ore was stromeyerite, with malachite, cuprite, and a little hematite.

*Gold Mountain District, Nevada.**

We followed a trail up a wash, which took us just to the east of Mount Magruder, then down a gentle slope, and across a barren desert. Finally, after crossing two ranges of mountains, we came to another sand desert. Up the opposite side of this we came to Camp Gold Mountain, which is situated on the northern slope of Gold Mountain. The well at Gold Mountain Camp furnishes just sufficient water for the three men and four animals that are kept there. The district was formed in 1865. The nearest place for mail and freight-shipping is at Silver Peak. The nearest railroad station is Battle Mountain. Wood is abundant, and water can only be obtained on the northern slope of the mountain by sinking wells. On the southern slope, in a ravine, is East Spring, of alkaline water. The chief ore is gold, and for the purpose of reducing this an arrastra has been erected, and gold is obtained by means of amalgamation. Cost of mining the ore is about $10 per ton. Barley is worth 10 cents per pound, and hay is worth $50 per ton. There is sufficient grass on the mountain-slopes to furnish all pasture necessary for the animals. The amount realized for one month's work is $400, and two hundred pounds of rock is generally worked per day. The chief mines are the Evening Star, State Line, Nova Zembla, Kohinoor, Golden Eagle, Bamboo, Boomerang, Little Bell, Huburmac, and Borneo. The total number of locations is about forty. The amount expended since 1865 is about $7,000. There are but two men working at present, but at one time there were twenty employed. A 10-stamp mill would cost in this place $10,000 or $15,000. Many of the mines are situated on the slopes of the smaller mountains, which generally run east and west. Much gold is taken out of the summit of one mountain of syenite. The gold occurs in quartz, jasper, and malachite; specimens of the latter are unique. Argentiferous selenite, of excellent quality, occurs in abundance four miles south of camp. The State Line ledge lying five miles to the northwest, is 3,000 feet in length, and 20 feet thick, yielding $20 per ton. The ledge runs northwest and southeast.

*Palmetto District, Nevada.**

This district was formed on April 9, 1866. Nearest place of communication is Silver Peak. The nearest railroad station is Wadsworth. The ledges run north-northwest and south-southeast, and dip at an angle of 45° northeast. Abundance of timber, and several springs of water, and small streams two miles east. The number of tons of ore taken from the mines is about 500. Cost of mining ore is $12 per ton; cost of milling and roasting, $35 per ton; cost of chloridizing, $15 per ton; labor per day, mining, $4; labor per day, milling, $4; cost of barley, per pound, 5 cents; cost of hay, per ton, $50. There is one 10-stamp mill here, which cost $90,000.

The Principal Mines.—On the western slope of the range are the New York, Champion, Kentucky, and Virginia, supposed to be the same vein.

Those on the east are the Tennessee, Palmetto, Carolina, and Louisiana. The amount expended in these mines is $75,000, and bullion obtained about $200,000. A 10-stamp mill at present would cost about $36,000. The valley contains large quantities of grass, and is generally on limestone and sandy soil. Further to the west are large quantities of porphyritic granite, containing fine crystallizations of orthoclase.

Green Mountain District, Nevada.

This district lies to the south of Palmetto, and is at present deserted. It was organized in 1869. The cost of working is the same as in Palmetto. The gold which was worked chiefly amounted to about $2,000. The only silver ledge in the district, the Veta Madre, runs northwest and southeast, and dips east. This lies between limestone and granite strata. The once famous Tule Cañon belongs to Green Mountain district. A part of the old Cottonwood district belongs to the Palmetto. In the latter district are about one hundred and twenty-five claims. There are not more than twelve or fifteen persons living here at present.

* From notes furnished by Dr. W. J. Hoffman.

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*Columbus District, Nevada.**

The town of Columbus is situated on the southern slope of the mountains, facing the desert. Columbus district was formed and organized in December, 1864. The nearest railroad station is Wadsworth, which is one hundred and thirty-three miles distant. The district is twenty miles square. The general course of the mountains is east and west, with small spurs running off in northerly and southerly directions. The mines are located all over the mountains. The metal-bearing veins run northwest and southeast, and are found in limestone, slate, and granite. Wood occurs in abundance eight miles from town. Water is scarce, as it is taken from wells. There are three mills at this place, two of which are 5-stamps each, and one a 4-stamp mill. There is no Stedefeldt furnace attached to any of them. The ore is chiefly chlorobromide, (embolite,) and the mills since starting, a year ago, have yielded about $30,000. Ores are worked by the dry process. The total number of tons worked is between 3,000 and 4,000. Cost of mining is $10 per ton; cost of roasting and milling, $45 per ton; cost of labor per day, at mines and mills, $4; cost of barley, 5½ to 6 cents per pound; cost of hay, $45 per ton.

The stage runs to and from Reno; fare, $50. Freight is taken to and from Wadsworth, and costs from 4 cents to 5 cents per pound. The two 5-stamp mills work each about six tons of ore per day, and the 4-stamp mill about five tons per day, making a total of seventeen tons per diem.

The principal mines of the district are the Mount Diablo, Black, Metallic, Columbia, Northern Bell, Peru, Potosi, Bellmarte, Pappinaux, and Vulture. Development of Mount Diablo has cost $40,000, the remaining ones each $15,000. There are five hundred or six hundred locations in the district. Total number of inhabitants about three hundred; number of houses about forty-five, including stores; stores, 4; livery stables, 2; saloons, (about,) 10.

*Oneata District, California.**

This district was formed in June, 1870. The town is ten miles from the district. Reno is one hundred and twenty-five miles from Benton and the nearest railroad station. The mines and district are located on the western slope in the northern spur of the White Mountain Range. The ore is, in appearance, a mere deposit, and the 100 tons that are now in sight yield, or are worth, according to assay, from $25,000 to $30,000.

There is running water and plenty of timber all through this part of the mountains. The ores accompany talcose slate, granite, and metamorphic limestone. The ores are all sent to Columbus for milling. Cost of working mines, $60 per ton; cost of milling, $60 per ton; cost of mining and milling labor, each $4 per day; hay worth $40 to $45 per ton.

The principal mines are the Wetherell and Indian Queen, and proceeds for one month's work (of ore) was $500. Freight to Reno is 7 cents per pound, and for ores $60 per ton. There is a 10-stamp mill and Stedefeldt furnace building now at Partzwick, costing $25,000. In these mines there are generally from twenty to thirty men employed.

*Montgomery District, California.**

The next district is the Montgomery, organized in 1863 by Henry B. Rich as recorder. The mountains, as in the last district, run north and south, and the mines are located over nearly all parts.

The true metalliferous veins run irregularly north and south. There is plenty of wood and water in the mountains. The rock overlying the silver-bearing rock is limestone, over which comes granite. The ore yields generally from $250 to $300 per ton. Cost of mining, per ton, $75; cost of milling, per ton, $50; cost of roasting, per ton, $15; cost of labor, per diem, $4.

Silver Peak and Red Mountain Mining Districts, Nevada.†

These mines are situated in Esmeralda County, Nevada.

Red Mountain District.—The mines in the district were discovered January 26, 1864.

Silver Peak District.—The mines in this district were discovered, and district organized February 1, 1865. The distance from railroad is one hundred and sixty miles by wagon-road. Nearest station on railroad is Wadsworth.

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* From notes furnished by Dr. W. J. Hoffman.

† From notes furnished by Lieutenant D. A. Lyle.

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Timber.—This is located on the summit and west slopes of the Red Mountains, extending twelve or fifteen miles along the summit, and about ten miles from the mill. The timber-belt is about eight or ten miles wide. Varieties: Piñon or nut-pine, cedar, mountain mahogany. The timber is small, but good for that country, and plenty of it.

Water.—In Clayton Valley, near foot of eastern slope, is a cluster of large springs. They are all brackish, one or two boiling, nearly all warm, and a few cold. Water is abundant enough to run a 200-stamp mill. Also springs on west slope. Red Mountain Spring, the principal one, issues from the foot of the peak of that name. This water is pure and good. Limestone spring flows at least 6,000 gallons in 12 hours. Several springs on the the western slope; one small alkali spring on eastern slope, about six miles from those in valley; water quite cold.

Rocks and Minerals.—Limestone, granite, mica, greenstone trap, one very remarkable dike of the latter on east slope, almost vertical, about 8 feet or 10 feet thick, running from base to top, dividing the ridge into equal parts. The greenstone is eroded considerably, leaving a steeply-inclined channel through the limestone and granite, basalt, obsidian, trachytes, lava, scoria, volcanic ashes, salt, calcareous tufa, quartz, (all three varieties,) vitreous, chalcedonic, and jaspery formations, and pumice. Small crystals of smoky quartz were abundantly found in the felspathic lavas. In Clayton Valley are found trilobites, fossil fish, corals, and concretions.

Ores.—Gold—free gold in quartz, and sulphurets, and auriferous galena. These have been worked by free process and wet-crushing process—amalgamated on electro-plated copper. Average yield per ton, $28. Silver—chlorides, sulphurets, argentiferous galena, and horn silver. These ores were worked awhile by the wet process, but it was a failure, yielding about 40 per cent. of the assay value. The ores of the Lodi and Tiger mines were worked successfully by the wet process, yielding 80 per cent. of assay value.

Bullion.—The gross annual production of bullion from these mines, while the mill was running, was between $900,000 and $1,000,000, averaging about $25,000 per month.

Cost of mining, milling, &c.—Average cost per ton for mining, (gold and silver mixed,) $5 per ton. (*Note.*—Perhaps a little more for gold, and a little less for silver.) Average cost for milling per ton, (no silver milled,) $3.50 for gold. Average cost for roasting, (none roasted here, some silver sent away and roasted.) Average cost for mining labor, $4 per diem. Indian labor, (used at mill,) 50 cents per diem. Cost of 10-stamp mill, (put up,) gold, $15,000; cost of 10-stamp mill, (put up,) silver, $20,000 to $25,000; cost of 20-stamp mill, (put up,) gold, $25,000; cost of 20-stamp mill, (put up,) silver, $30,000; cost of 30-stamp mill, (put up,) gold, $30,000; cost of 30-stamp mill, (put up,) silver, $50,000.

Mines worked.—The principal work has been upon the Crowning Glory Mine. The company employed seventy-five men upon it for three years at $4 per diem. The amount expended in the mineral development of these mines is about $280,000. Total amount of bullion extracted, about $2,000,000. The ore is hauled about seven or eight miles over a good road to the mill. The ore is transported down from the mine for some distance in ore-carts, over a railroad; these cars descend under the action of the force of gravity almost, and are hauled up empty by mules.

Inhabitants.—At present only four or five men remain here, all the hands having left, while the mill lies idle for repairs, and all work is suspended. There are in the place about twenty houses built of concrete, one store, and one livery stable. Materials for making concrete are close at hand, gravel being on the ground and limestone in a butte near by, and a lime-kiln near the mill. The company burn their own lime. There is one stage-line to Aurora, fare $25 to that point and $50 to Reno on railroad. Freight, 4½ cents per pound to Wadsworth. Mails weekly, I think.

*Deep Spring Valley District, California.**

This district was organized in 1862, and called White Mountain District, but has since been changed to the above name. Nearest station on Central Pacific Railroad is Wadsworth, distance one hundred and eighty miles.

PRINCIPAL MINES.

1. *Cinderella.*—This vein dips to west 5°. It is not worked now. Some miners sunk a shaft to some depth a few years ago, but were killed or driven away by the Indians. Assay value per ton, $75.

2. *San Juan.*—There has been expended in opening this mine about $2,000. It has produced so far $1,500 in bullion.

3. *Julia Dean.*—One thousand dollars have been expended on this mine. No bullion produced. Vein vertical.

* From notes furnished by Mr. F. Klett.

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4. *San Francisco.*—Five hundred dollars expended opening it. Three hundred and sixty dollars produced in bullion.

5. *Tennant.*—One thousand dollars expended on it. Produced $500 or $600 in bullion.

6. *Homestead.*—Five hundred expended. Produced $600 in bullion.

Ores.—All silver. Some of the veins contain 33½ per cent. of gold, and others more. The ores must be reduced by roasting. Average yield per ton, $100. The ledges and veins are situated in both the foot-hills and main range of the White Mountains. They lie in Deep Spring Valley, in the eastern slope of those mountains, and extend from the low foot-hills to the summit. There are two systems of veins running nearly at right angles to each other. In the foot-hills the strike of the lodes is north and south. Near the summit it is nearly east and west. Country rock is granite in the foot-hills, and higher up it is talcose slate.

Timber.—About three miles (north) in the mountains there is plenty of wood—cedar, and nut-pine. About twelve miles up on the range good pine is found.

Water.—Wyoming Creek, having its source in the mountains to the north and northwest, descending, runs southeast for four or five miles in Deep Spring Valley, and sinks in the sand; water, pure and excellent, sufficient for a small mill, at least.

Mills.—One mill here, 5-stamp battery, run by water-power, 2 pans, 1 settler, and 1 furnace; cost about $10,000. Can mill about 4 tons of ore per day.

Cost of labor.—Average cost per ton for mining the ore, $20; average cost per ton for milling and roasting, $50; mining labor per diem, $4; milling labor per diem, $3.

*Fish Spring District, California.**

This district lies in the foot-hills on the eastern side of the Sierra Nevada, about nineteen miles north of Camp Independence, California, in Owen's River Valley. The mines are small gold mines, mostly owned by one man, and worked by means of arrastras run by water-power. They yield a small but certain income. Water very abundant and excellent. My notes on this district are not at hand, which precludes any attempt at giving yields, &c.

Kearsarge District, California.

This district is situated well up in the foot-hills of the eastern slope of the Sierras, at a distance of eight miles from Camp Independence, California. The mines are well opened at two levels, and show in each large quantities of average milling ore, that yields a good percentage and return by the well-known Washoe process. A tramway down a steep incline carries the ore from the mine to the mill, which is compactly constructed, of ten stamps, with all the modern improvements. The application of water as the power for driving the machinery is by far the prettiest specimen of the kind that I have ever seen. A mountain creek is tapped 150 feet above the mill, and the water brought in an open ditch to a plane inclined at an angle of about 40°, down which it passes with tremendous velocity until it is received by a 13½-inch turbine wheel, which it sets in motion, and which takes the part of an expensive engine in the ordinary mills.

The ores are of chloride and sulphide of silver associated with oxide, sulphide, and carbonate of lead. Many specimens are covered with crystals of molybdate of lead, and are of a yellowish-brown color. All the mines that are worked in this district belong to the Kearsarge Mining Company; they are 13 in number, and are all supposed to belong to one large fissure vein.

This is one of the many districts that would be tapped and supplied by a railroad passing to the southward from either Truckee or Wadsworth, on the Central Pacific Railroad, to the Colorado River.

San Carlos District, California.

The mines are situated in the low hills nearly east from the little town of Independence, and were abandoned at the time of the burning of the

* From notes furnished by Lieutenant D. A. Lyle.

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mill by the Indians in 1864. It is understood that the mill is to be rebuilt and mining developments to be resumed.

Lone Pine District, California.

The mines of this district are at the little camp known as Cerro Gordo, and are principally of argentiferous galena. They were discovered some six or seven years ago, and several unsuccessful attempts made to extricate the silver lead bars from the ore, but without success; finally the process was discovered. The programme of working is now somewhat as follows: a scorifying furnace is charged with two-thirds lead ore and one-third silver ore of a poor quality, found on the eastern slope of the hills and heavily stained with carbonate of copper; this and the proper amount of charcoal is kept in a state of fusion for eight hours, then drawn off and cooled; after which it is introduced into the ordinary blast furnace, with the requisite amounts of charcoal and salt. This system works admirably, and now enormous returns are secured from these very inaccessible mines. The ore averages from $50 to $65 per ton, in silver, the resulting bars from $260 to $300 per ton. The veins are wide, and the ore occurring in large lenticular-shaped masses trending to the southward; so far as known the supply is inexhaustible.

Notwitstanding the expensive freights, the mines are made very remunerative. The cost of transportation to Los Angeles, California, is $55 per ton; thence to San Francisco $20 per ton; thence by Pacific Mail Steamship Company to Newark, New Jersey, at an additional expense of $25 per ton.

It was found to be more profitable on account of the higher percentage of silver from the bullion, and the increased price obtained for the lead to ship to Newark, paying the extra expense, rather than to have the refining done in San Francisco.

This is only one proof out a number that can be cited, showing the advantage of large establishments where skilled labor can be concentrated, by means of which a still higher and higher percentage can be extracted from rebellious ores, which is a matter of so great necessity, especially in ores of low grade. There are three furnaces smelting ores from three mines, two at Cerro Gordo and one at Swansea, on the northern shore of Owen's Lake.

Coso District, California.

This district, situated south and east from Owen's Lake, in the Coso Range, has been worked at fitful intervals in a rude and simple manner. The quartz is gold-bearing. One of the members of the expedition found about seventy-five persons employed here, mostly Mexicans, who make use of the arrastra process for the extraction of the bullion. The fact that Americans have not occupied this ground may argue in favor of the poverty of the veins, which, added to the presence of the surrounding desert on three sides, make the locality anything but an inviting one.

*Granite Mountain District, California.**

The mines of this district were discovered by Mr. Egan, of Swansea, and the district organized a year or so ago.

Principal mines.—The principal mines are situated on the west side of Granite Mountain, a high abrupt peak in the Tortoise Range, and are at a great altitude. The principal mines are the Toronto, Santa Clara and Alta. The bluffs in which they are

* From notes furnished by Lieutenant D. A. Lyle.

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situated are very steep and almost vertical, and to the south of Santa Clara is a trap-dike, nearly vertical, cutting the strata. Country rock—granite, limestone, and metamorphic slate. The ledges of mineral are near the juncture of the strata of slate and lime. The ores are galena, associated with some carbonate of lead, with quartz; a good deal of hard limestone is interstratified with the galena.

The Alta is above the Santa Clara, and has a mineral vein several feet wide; hematitic iron was found in this vein; also, perhaps, a little magnetite; but the Santa Clara is the chief lode; this is an immense bed of mineral, and is apparently quite rich; the metalliferous vein is many feet thick, and, perhaps, extends through to the eastern side of the peak in a horizontal direction.

Timber.—There is little or none in the immediate vicinity of the mines, but ten or fifteen miles distant along the range, plenty for fuel is found.

Water.—Plenty of water is found in Darwin Cañon, a very narrow and contracted gorge cut through slate; this is about two or three miles from the mines.

Communication.—A road could be built from Owen's Lake to Darwin Cañon, but sand would be very deep in places; considerable labor would be required at others. A trail leads from the cañon up to the mines, a good one, but very steep. It is said that a road can be built up another cañon to the south and southwest of mines, to within a mile at the farthest. I did not pass over this ground, but think, from what I saw of the termini, it would cost considerable, both in labor and money, and the ore would then have to be packed down on mules to the road, for some time at least after the mines are worked. The mines are not worked yet.

Telescope District, California.

Visited by a topographical party. (No notes.) Situated south and west from Telescope Peak; deserted at the time of our visit for want of means on the part of the owners to prosecute explorations.

Lyons District, California.

Discovered in 1871. Lies in Cottonwood Cañon, that runs into the northwestern arm of Death Valley. The veins are true fissures of low-grade ore, protruding through solid granite near where eruptive beds of volcanic rock have come in. A fine stream of water rises near the head of the cañon, and sinks after flowing three or four miles. This is fringed along its entire length with heavy cottonwoods. This locality has been but little prospected, but undoubtedly is mineral-bearing over quite a large area.

Death Valley District, California.

This district, as its name indicates, overlooks the valley of that name, being on the eastern slope of the Telescope Range. A little mining for gold from quartz was done here. The same remarks apply as in the case of the Telescope District.

*El Paso District, California.**

This district lies twenty-eight miles southeast of Walker's Pass, or about one hundred and seventy-five miles from Los Angeles or Visalia, and is easily accessible, over fair roads. Timber none. Excellent water may be had from wells. Formation, of easily decomposing granite, associated with metamorphic rocks, and carrying quartz and felspar seams. The quartz seems to contain mostly sulphides and chlorides. Iron and copper pyrites are present, considerable argentiferous galena, and silver and lead ores. Three adits have been started and several shafts, the deepest being about 50 feet. The main adit had been driven about 100 feet in a S. 25° E. direction, with an inclination of about 8°. I found no seams exposed in the openings, finding specimens only in the dump and in some unopened seams, which looked as if perhaps workable. The mining was evidently of the simplest description. Mines at present entirely deserted.

* From notes furnished by Mr. A. R. Maryine.

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*Amargosa Mines, California.**

Twenty miles east of the south end of Death Valley, and north of Camp Cady, near the old Mormon trail. They are deserted, though the remains of buildings, adits, and stump-heads, &c., show that considerable work has been done. Wood and grass entirely wanting, while the little water present is very alkaline. The adits are in granite, run at random in from the sides of a cañon; they follow no seams, veins, or deposits of any kind, and none could be found, while there was no ore discoverable in the dump-piles or *débris*. The distance from the base of supplies, and the desert nature of the country, would prohibit anything but the very richest of mines to be worked with any profit.

Timber Mountain District, Nevada.

Discovered in 1869, in Spring Mountain Range, north and west from Las Vegas ranch. The ores are galena and sulphide of silver, in addition to large deposits of low-grade base metal silver ores, distributed over a large area. The high mountains are heavily wooded. All the appurtenances for mining can easily be rendered available, and the Colorado River will, in time, be the outlet for these ores.

Yellow Pine District, Nevada.

The mine is on the crest of a fractured anticlinal of limestone of Carboniferous age. The broken strata make with each other an angle of 90°, and have received little, if any, relative vertical displacement along the plane of fracture. Supposing, as is presumable, that the fracture has afforded a channel for the distribution of the ores, it is probable that other bodies, similar to those already found, are irregularly disposed among the crushed beds below, but a continuous lead is not to be anticipated.†

The Comet mine was the only one visited in this district, and it is understood to be the prominent mine. The ore is of the smelting order, but, judging from general appearances, does not carry, as a matrix constituent, a natural flux. Should such be the case, this mine cannot be worked with profit, since the present remote location will not permit of transporting to the site of the mine an artificial fluxing agent. I quite agree with Mr. Gilbert as regards his notions of permanency, from a common experience among limestone districts. Galena ores, as a rule, are deposits in beds or pockets, rather than as veins. The Yellow Pine district as organized, however, is of great extent, and is said to show a multiplicity of locations and ores. Doubtless many of them will be utilized, and the Colorado River act as the channel of shipment, as these mountains offer favorable facilities, such as water, grass, wood, and timber, for mining. The main portion of the range has an exposure of limestone, overlaid at certain localities near the center of this district by quartzite, and along its northeastern slopes by eruptive beds of volcanic rock. There is an immense body of heavy pine timber distributed over a great share of the higher elevations of the Spring Mountain Range.

Clarke District.

This district is situated partly in Nevada and partly in California. The first reduction from the field-notes places Ivanpah and the mines in its immediate vicinity in Nevada, while those farther to the south are in California. This result should not, however, be considered as final, since it is subject to certain sources of error.

The mines here are in three groups, and show entirely dissimilar characteristics. The most northerly groups, in the vicinity of Ivanpah, occur

* From notes furnished by Mr. A. R. Marvine.
† From notes furnished by Mr. G. K. Gilbert.

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as thin veins in limestone, and dipping out from the hill where opened. Ores rich, showing stromeyerite and stedefeldtite, and some chloride of silver. The pay-streak is very narrow; the country rock greatly disturbed.

The more southern locations were not visited. The first lot found in the vicinity of Clarke Mountain occur in granite, and are reported as wide veins of low-grade silver.

Still farther south, nearly fifteen miles, large deposits of copper have been located, and opened to some extent. Water is scarce in the northern part, but more plenty lower down the range. The country offers natural facilities for mining, and Cottonwood Island, on the Colorado, can be reached by an easy grade.

The want of capital, here as elsewhere, is sadly noticed. The mines are numerous, and in the hands of a well-organized and powerful company ought to be made remunerative.

Contracts were in operation for building a 5-stamp mill at Ivanpah; this would render available considerable ore now on the dumps, valued at about $100 per ton. Ore at present is shipped on a small scale, via Los Angeles, three hundred and seventy-five miles, to San Francisco for reduction. Mining labor, $3 per day. Indian labor is utilized to a small extent. Freight from Los Angeles is 6 cents per pound. No indications of water in any of the shafts; but a well is being sunk between the mines and the town and on the western slope of the range. Depth, 70 feet; no water so far.

New York District, Nevada and California.

This district lies south and east from Clarke Mountain, at a distance of seventeen miles. Mines extend on the western side of the range. Deposits of a cupreous sort of ore were noticed, probably very poor in silver. Galena and sulphuret ores were found on the eastern slope. Water scarce, wood and grass plenty. Approaches to the Colorado River easy.

Hualapais District, Arizona.

This was located years ago, and known as the Sacramento district. Some labor was spent, with little success, until finally the parties were driven out by Indians.

In the spring of 1871 a party of prospectors re-entered the district, and discovered many new veins, showing almost every variety of silver ores. Some little excitement followed, and very many claims were located. The general direction of the ledges is from north 40° west, to north 55° west, and the surface exposure of mineral is the largest I have ever seen. The veins occur in solid granite, and along edges of eruptive volcanic beds, and are wide and well defined. Many of the surface ores are rich, and especially the narrow veins, most of which will prove to be feeders. Both gold and silver are found, the latter predominating. The veins that are to be permanent will be of the lower-grade ores, but yet of sufficient richness to admit of their being worked even in this locality. There are evidences that the water-level is to be found early, and that the ore will assume a more permanent form, principally of the blue sulphuret variety. One of the handsomest veins that it has ever been my fortune to examine was the Porter mine, at that time the best developed in depth in the district, showing a distinctly organized vein in solid granite at 55 feet. Mining operations can now be conducted in the northwestern part of Arizona, as the Hualapais Indians, occupying

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this section, have been subdued and are at peace. The Colorado River is near at hand as a mode of transit, and the projected Atlantic and Pacific Railroad passes midway between several mining districts that border on the river. I look upon this district as one of the most promising in Arizona, and, indeed, among many of those met in my travels. One 5-stamp, free process mill is in process of erection.

Maynard District, Arizona.

This district was discovered in 1871, and lies on the eastern slope of the Hualapais Mountains, at a distance of thirty miles from the Needles on the Colorado River, and the railroad near the thirty-fifth parallel passes within nine miles of the principal locations. The mineral belt covers an area of nearly twenty square miles. The veins are similar to those in the Hualapais district, have the same direction, and, in fact, to a remarkable degree, these districts are counterparts. No work done yet. Wood, timber, and water are plenty. The site for a mining-camp is very desirable. This locality also will act as a center, from which much prospecting will be done further down the same range; also to the south and east, and bordering the country of the Apache-Mohaves, from which locality float-mineral was noticed in different places.

The mines in the vicinity of Prescott were visited by Lieutenant Lockwood, and a slight memorandum appears in his report.

Those about Bradshaw Mountains were visited by a party under Lieutenant Lyle, and his remarks are quoted. Later statistical information has been obtained from this locality, which is to be collated in systematic form for a subsequent report. From very many localities during the season float-mineral has been brought into camp, until one is weary with so much mineral and so many mountains. It all adds to that forcible proof, already established in my own mind, that the stores of precious minerals in our western territory are inexhaustible, and that mining in the United States is only in its infancy.

*Mines in Bradshaw Mountains, Arizona**

These mines lie southeast from Prescott, Arizona Territory, and about forty miles distant. The principal mining districts are the Tiger, Pine Grove, and Bradshaw, in the Bradshaw Mountains, and near Bradshaw City, a mining-camp near the summit of the mountain and at an elevation of about 7,000 feet. These mines are on the main range of mountains, whose trend is nearly north and south.

*Tiger District, Arizona.**

This district was organized in June, 1871, by the Tiger Mining Company. Principal mines: Tiger, California, Benton, Gray Eagle, Loreno, and Eclipse. There are several other ledges, but these are the principal ones.

1. *Tiger.*—This mine is opened by a shaft 90 feet deep, and a level run 20 feet below the surface, and another one at the depth of 80 feet. Country rock: granite and slate. The hanging and foot walls are, both of them, slate in all the mines in the Tiger district. Croppings bold. Ores: sulphurets of silver; assays $800 to $1,000 per ton, first-class ore; $60 to $80 general average; width of vein, 10 feet. The vein has been traced for four or five miles.

2. *California.*—Ledge 30 feet thick, and two miles long. Ores: silver; chlorides and sulphurets; all the mines in the district, silver with a little gold.

*Pine Grove District, Arizona.**

This district was organized in June, 1870. Principal mines: Blandina, Moreland, New Era, Shelton, and Hunter. Ores: gold and silver; sulphurets and chlorides. Course of veins, north and south, northeast and southwest. No work being done yet.

* From notes furnished by Lieutenant D. A. Lyle.

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*Bradshaw District, Arizona.**

Date of organization unknown, but prior to the others. Principal mines: Del Pasco, War Eagle, and Bradshaw. Ores: gold-quartz; course of veins, north and south and northeast and southwest; country rock: granite; foot-walls: granite and sometimes the hanging-walls. Timber: plenty of pine, juniper, and some oak. Building and mining timber is abundant on the ground and excellent in quality. Water: scarce—not enough for milling purposes. It is found in the shafts, but it is questionable whether the supply will be sufficient for mining purposes. Mills: no mill or machinery yet in the Tiger district; a small 5-stamp gold-mill in Bradshaw district for milling rock taken from the Del Pasco mine; water supply not very abundant. Cost of various articles at Bradshaw City: hay, per ton, $75; barley, per pound, 15 cents; lumber, per thousand feet, $100; miners, $2.50 per day and board; blasting-powder, per keg, $15; freight, per pound, 15 cents; cost of a 5-stamp mill, (put up,) $10,000; cost of a 10-stamp mill, $15,000 to $20,000; cost of a 20-stamp mill, $25,000.

Remarks.—Prescott, Arizona Territory, is the nearest post-office, about forty miles distant, reached by a trail. This has a good track, but is, in many places, very steep. There is a wagon-road from Walnut Grove to Minnehaha Flat, five miles from Bradshaw City. A steep trail leads up from the flat to the city. The place contains about one dozen log-houses and a store.

*Turkey Creek District, Arizona.**

Mines are deserted; they are all gold, I think; an old dismantled mill on Turkey Creek; lack of water for mining purposes.

*Weaver District, Arizona.**

This district is situated south of Antelope Mountain and in the vicinity of Wickenburg, Arizona Territory. Recorder, C. P. Stanton, at Vulture City, three and one-fourth miles north of Wickenburg. Principal mines: Great Sexton and Mason.

1. *Great Sexton.*—This mine is opened by a shaft and tunnel. Ores: gold-bearing quartz; assays $30 per ton. Only fifty tons have been worked at Vulture mill; result not known.

2. *Mason.*—Opened by a shaft; ore worked by horse arrastras. Ores: gold and silver, with quartz; assays $640 silver and $27 gold per ton. Country rock: quartz and granite. General course of veins in district: northeast and southwest.

Mills, cost of labor, &c.—Vulture mill, at Vulture City, is a 40-stamp mill. Mining-labor, $3 to $4 per day. Wood, at Vulture City, $10 per cord; very scarce. Plenty of grass and water.

*Walnut Grove District, Arizona.**

None of the veins are being worked now in this district; no water for past two seasons. Principal mines: Sutler, Blue Jay, Big Rebel, Josephine, Robinson, and Crescent Lead.

1. *Sutler.*—Ores refractory; both gold and silver found, but principally gold; assays $30 gold, $17 to $18 silver per ton; no galena; thickness of lode, 22 feet pay-ore. course of vein, northeast and southwest.

2. *Blue Jay.*—This mine was opened by a shaft and tunnel, the latter 70 feet in length, run on a 4-foot vein of gold and silver.

3. *Big Rebel.*—Opened by a tunnel; gold-bearing quartz in slate formation; lode 12 feet thick; course of vein, northeast and southwest; assays $37 gold per ton.

4. *Josephine.*—Opened by a tunnel in years 1865 and 1866; vein in slate; 18 inches thick of pay-rock; course of lode, north and south; assays $47 per ton; contains some free gold.

5. *Robinson.*—Opened by a shaft and tunnel, the tunnel tapping the vein 80 feet below the surface; course of lodes, north and south; ores quite rich; $90 to $100 per ton resulting from working arrastras; free gold. It is said that a mill will soon be erected for working this mine.

6. *Crescent Lead.*—Ore, galena; assays $884 silver, and 62 per cent. of lead; 5 feet of pure metal; course of lode, northeast and southwest; no work done yet.

Remark.—All these mines held by miners under United States laws.

*Hassyampa District, Arizona.**

The Montgomery is the principal mine, located in October, 1863; worked by horse arrastras; $250 to $300, free gold, resulting; have had no water now for two years. This was the first mine opened in Yavapais County, Arizona Territory.

* From notes furnished by Lieutenant D. A. Lyle.

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*Martinez District, Arizona.**

The mines in this district lie south and southwest from Camp Date Creek. Principal mines: Mayflower and Martinez.

Mayflower.—Mine, gold; matrix matter, quartz; country rock, granite; strike of lode, northeast and southwest; opened by a shaft sunk 40 feet; $10,000 expended on this mine; ore hauled to Vulture mill, twenty miles distant; water scarce—some in Martinez Creek, two miles distant; course of creek, southeast—empties into Hassyampa.

2. *Martinez.*—This mine is said to be richer than the Mayflower; gold-quartz, formerly worked by arrastras; first ton paid $129 gold; not working now; cost of mining-labor, $3 to $4 per day. Title, miner's: these two mines are nearly south of Camp Date Creek, Arizona Territory, and six miles distant.

*Santa Maria District, Arizona.**

Boundaries unknown; the Rhinoceros is the principal mine; lode 3 feet thick, inclosed in walls nearly vertical; not working now.

VULTURE MINE, ARIZONA.

This mine, so noted as being famous among the gold mines of Arizona, could not be visited this summer for want of time; however, certain information has been gathered, which will be placed in form in due time. One point of significance is the fact that at the mine it is reported that there are more than 1,000,000 tons of ore, of low grade, that cannot be transported 14 miles to the mill, for reduction, because of the cost. The dump-piles at a great many mines all over the country are groaning with just such loads as this; certainly an argument in favor of concentrating processes, and increased and cheapened facilities for mining. In this connection let me say that I believe that the production of gold from Arizona is likely to be far in advance of the same mineral from Nevada. The mines in Apache Pass, visited in 1868, are somewhat similar in character to the Vulture mine, and are sure to become productive upon the opening up of the country.

MINES IN THE PINAL MOUNTAINS, ARIZONA.

Upon reaching Tucson it was found that considerable interest was evinced in some late discoveries in the Pinal Mountains, a pretty dangerous Indian locality. Notice of these will be found in Lieutenant Lockwood's report, and the following remarks of Dr. Hoffman are herewith attached:

Gold.—Auriferous sand was found near the trail leading from the Salt River to Camp Pinal, about eight miles south of the river. The formation was syenitic, with occasional bowlders of granite. Minute particles of gold were visible in the sand, and specimens, or rather samples, of sand preserved. *Note.*—It is believed that prospectors so far have been unsuccessful in utilizing these same placers.

Silver.—On nearing Camp Pinal, and about six miles north, we found float, (in the different washes,) consisting of stromeyerites, with their coatings of azurite and malachite. The fragments were rich, and would probably be worth $100 to $150 per ton; but these were, apparently, choice pieces. The float was found on both the northern and southern slopes of the Pinal Mountains. After we arrived at Florence, I saw members of a private prospecting party, who had fine specimens of silver ore, and which they claimed upon assay was worth $7,000 per ton. I think it utterly impossible, as the ore consisted of a cupreous and argentiferous hematite, with blotches of stromeyerite, &c.

* From notes furnished by Lieutenant D. A. Lyle.

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Until the Indian difficulty is settled, mining must remain practically at a stand-still in Arizona, except in the northwest part of the Territory and certain other strips that border the Colorado River.

In closing this subject, which somewhat in detail has given the framework of what may be considered as worthy of receiving attention on the part of Government explorations, a few suggestions will be ventured upon material, though not new, yet that still has a vital bearing upon the mining interests of the far West, that are slowly struggling toward their merited prominence, and upon subjects worthy the attention of our political economists and legislators.

The time is fast approaching when the mining interest is to assume a greater national promise and the one, next to agriculture, that calls for an enlightened support on the part of the Government.

Experience, already gained, leads to the conclusion that it is proper, as among the first steps, to set apart certain areas from the public domain, to be segregated from the public lands and to be known as "mineral lands," to be subject to entry patent and sale as such, and governed by special laws, the details of which have been so selected that the Government interests shall be secured, that free and equal rights to all the miners shall be obtained, so that the public lands, held in heritage for succeeding generations, shall not be created into a subsidy to the mineral interest, and so that a fresh impetus shall be given to mining enterprises that are to depend upon our private capital legitimately employed for their support. From the mapping out of the geographical boundaries of various districts it appears that they often overlap each other and follow no standard regarding size, therefore early legislation may well fix these limits that surround any specially discovered mineral area, and as the longer axis of the mineral cropping is generally sensibly north and south, the limiting rectangle might well be established to not exceed twenty miles in this direction, and fourteen miles in an easterly and westerly direction, measuring from the central location. So far as segregating areas of land from the public lands and applying them to mineral purposes is concerned, it cannot result in detriment to the Government interests, that accrue from the occupation and sale of new lands. Since the laws governing the new disposition have for their precedent the system that has worked so admirably in securing homesteads to settlers in remote sections, and stipulate similar terms, but away from the seaboard, from close inland transportation, the interior mining districts, of which the number increases year by year, need all that surrounds them to themselves, as a part and parcel of their own integral character. Furthermore, at ninety-nine out of every one hundred districts, agricultural land as such has no marketable value unless the mines are worked, and the remunerations from mining enterprises are not generally so great as to render it advisable for a capitalist to seek a remote corner where mines are for sale and first purchase a shaky possessory title to a mine, successively titles to water, mill, wood sites and other necessary conveniences for conducting his operations. It seems highly desirable that this idea of setting aside mineral districts as such should be favorably considered.

The local mining laws in districts that are distant from settlements are generally formed by the parties of prospectors who push out in advance, and, discovering fresh mineral, at once set out to form a district. Ordinarily these parties have no text at hand that gives them a version of the best known local mining laws, and are probably unskilled in legal or other technicalities, they create a system of laws which would answer very well if the mines were of no value, but in case of sudden

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developments of wealth, where chances to question the validity or extent of a claim are involved, the loose description from the records affords one of the arguments in favor of litigation. Therefore, it seems not unwise to frame a set of local mining laws that shall be generally acceptable to all the interests involved, that branch out into new and unprospected regions, and which shall conform to the United States laws already enacted and which shall be accessible to all. The nearest approach to such a system was found in the set of by-laws adopted to control the Blind Mountain district, that were prepared by an able mining lawyer in San Francisco, whose long experience entitles him to consideration.

They would be quoted here only that the space does not permit. On the part of Congress, the most earnest solicitude should be evinced to so amend the general mining law, from time to time, as to make it conform to the strict sense of needs that are requisite to the various mining sections, to be governed by experience and knowledge gathered from time to time from reliable sources.

It is believed that the bill now before the mining committee in Congress has stipulations defining, with a greater accuracy and with a more liberal tone, the limits and integral character of a "vein, lode, ledge, or deposit," and embraces details favorable to a more speedy method of obtaining a secure title to mineral property.

By persons whose experience has led them to take a comprehensive view of the wants of the mineral interest in our western territory, and to the position that the Government should assume as the guardian of this trust, the necessity and desirability of a national school of mines has already been urged. For me to concur would be only to reiterate ideas already advanced; presuming, then, upon the use and practicability, it only remains to mark the place, and the single suggestion offered is, that it should be at Washington. Besides, it may be urged as a national economy that the proceeds available from the sale of mineral lands should be devoted to the maintenance of such an institution.

One of the urgent wants felt in the promotion of our mining industry is that of increased and cheapened inland transportation. River transportation upon our western coast is, to a great extent, a failure, as beyond the Columbia and Colorado Rivers, that furnish somewhat irregular avenues of connection with the interior, no streams of considerable magnitude exist; river transportation, even, in this very American age, loses its great power when pitted against railroads, as instanced at many localities in the valley of the Mississippi, where railroads supersede the river modes of transportation because of speed and time.

Therefore, it is railroads that the mining interiors of the western coast need, and it is not believed that Congress should, at this season, be so sparing of its land-grants to aid private capital in the prosecution of these schemes, since, having already given over to private corporations the better share of the lands that yet remain, there is relatively but little danger of diminishing the prospective revenue of the country by withholding from corporations, devoted to local interests only, grants of the very inferior land that in the majority of instances will inclose these lines of road. Narrow-gauge roads, that have met with so much favor upon the Continent, and which at present are being slowly introduced in the United States, recommend themselves at once to any one desirous of seeing this character of communication brought, as speedily as possible, to the doors of our mineral wealth.

In the new areas of silver-bearing veins that are becoming so numerous, it requires but little discrimination to show that the majority of

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the ores are complex in their character, and that the present known methods of reduction give only an approximate percentage of their silver-bearing value; therefore, the improvements that are from time to time suggested in the methods that may be adopted for the extraction of a higher percentage of bullion, are worthy of attention. Thus it is that, on account of greater facilities of talent and machinery, the refinery at Newark is in advance of that at San Francisco, and, in turn, that of Swansea collects the best-known methods of reduction; but cannot the skill and knowledge that is aggregated at these centers be diffused again, so that we can bring to little mining camps in the interior, practical results that shall enable them to resume operation upon one that is worth twenty dollars per ton, which before must remain untouched, because impossible to obtain from it more than fifteen? A subject worthy of note since for many years the shipment of the base metal ores will be made to these reduction centers, is that of concentration of ores by the specific gravity or entirely mechanical process. Several attempts at this have been made, but with, so far, but little success.

The mechanical appliances are imperfect, but are susceptible to that modification that shall prove the availability of the method. The introduction of cheapened labor, and especially in remote districts, a subject so sensibly urged by Mr. R. W. Raymond, United States Commissioner of Mining Statistics, merits favorable consideration. Let this labor come from whatever quarter of the globe it may, let it be Asiatic, African, European, or American, there should be no restriction to free trade in this particular when the necessities of a national interest require it for its development. I am led to believe that one thing that hinders greatly the embarking of capital in new localities is the want of reliable information as to the presence and position of the mineral-bearing ores.

The bullion product of the country, since statistics have been collected, has been found to vary within limits never exceeding ninety millions of dollars per annum; after the exhaustion of the placer-mines of California, this product sensibly decreased, until a reaction in its favor was experienced from the early results furnished by the Comstock lode. Much prospecting has been done since that time and a great many mineral districts located; the common experience proves these to be principally of silver. The sizes and grades of the districts are varied. They are all possessed of a greater or less amount of the precious metals, and in the prosperous future are to contribute to our national wealth and necessities, so that those who live to see the close of the present century may not be surprised at an annual product of bullion as large as one hundred and fifty millions, no more than they may be at the fact of the present ore in sight in Washoe—a mine which by many was not long since thought to be practically exhausted—of a supposed value of fifteen millions of dollars; all of this, provided enlightened legislation will study and assist the want of legitimate mineral enterprises.

Silver ore occurs in connection with limestone, granite, the older volcanic rocks, as propylite, andesite, rhyolite, &c., and quartzite; the instances of the latter are, however, very rare, as among the former very numerous, although the deposits are wanting in determinate characteristics.

From the latest and most reliable geological contributions to our knowledge as to the epoch of formation of the silver-bearing veins, this

[NOTE.—Information, where furnished by members of the expedition, is printed in small type.]

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period is fast being narrowed down to a much more recent geologic age than was formerly supposed.

MAPS.

The map now presented embraces in preliminary form some of the most general topographical information, the location of routes pursued, the positions of mining camps, &c. A rough transcript from most of the topographical notes of the season is given. The final map, on a scale of one inch to six miles, will delineate the topography in detail, and will be constructed with great care. Profiles of the more important north and south lines are to be produced.

Contour maps of two mining districts are in process of preparation.

A skeleton map, showing the areas occupied by the Indian tribes and their reservations, will be furnished for the use of the Indian Bureau.

A statistical map, showing relative amounts of arable, mineral, and desert sections, will receive attention.

A skeleton map embracing the perimeter lines of the great interior and exterior basins of this region is to be projected.

CONCLUSION.

Although the day of the path-finder has sensibly ended in this country, still it is expected that among the results of an exploration there should be something new. In summing up the effort will be made to lay the groundwork of the new discoveries, if such they may be termed, the bearing that these may have on further and more extended explorations, and estimates for their continuance.

As a subject of primal importance, the mapping out of the mining districts already discovered, locating their positions, areas, directions of lodes, &c., determining their place as links in the great chain of mineral deposition throughout the entire Cordillera system, and as presenting limits to the field for search for the precious minerals, the result fully sustains the most sanguine anticipations, proving the existence of mineral districts over large areas, and also that the field for prospecting has only commenced, although it may have progressed somewhat in advance of the interior development of new sections of country.

The topographical features of the great Colorado plateau have been developed along that portion of its perimeter from the vicinity of Saint George, in Utah, to the White Mountains rising out of it, near the border line between Arizona and New Mexico. Geological data along new ground in that specially rich field among the lower cañons of the Colorado have been gathered. The limits, character, and relations of a number of inclosed and entirely interior basins in Nevada and Southeastern California have been determined. A further exploration of the Colorado has finally determined the absolute head of navigation, the limit beyond which a party of examination will not be likely to ascend the river, and that, although navigation, subject to many difficulties, may be carried somewhat higher than had been expected, still the wants of the interior country will not demand this above a certain specified point. It has been ascertained that a railroad can cross the Colorado at the mouth of the Virgin River and be carried along easy grades into Arizona; also, that the Colorado can be crossed by a north and south line near the foot of the Grand Cañon, and that this route may at once be made available for mails to the northern part of Arizona, and for the inland passage of troops.

The almost incredible vertical height of the walls of the Grand Cañon has been verified, as also the crater character of the San Francisco Mountains. Auriferous sand and gravel has been noted at various points on the Colorado and along the tributaries from the plateaus, and

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at other localities, though the rumor of rich and extensive placer deposits is discredited.

The usual number of rumors of diamonds and precious stones were heard, but it is believed that their position must now be limited to quite inaccessible portions that have not yet been visited.

Much light has been thrown upon the limits of the great interior basins and also that of the Colorado. These are a few of the subjects, sensibly new, that suggest themselves; from continued investigations of a similar nature may be expected novel and unique information upon the same and allied subjects. The first grand necessity lies in the fact that the country ought to be more thoroughly mapped, both for military and civil purposes. In order to carry out this mapping project, parties in force must repair to this field, and they ought to be liberally and systematically fitted out; and hence schemes of exploration should follow a settled plan and form a special part and parcel of the annual estimates submitted to Congress.

In this connection, there is herewith submitted for the action of the Department the basis of a plan for the surveys and explorations necessary to a complete reconstruction of the engineer map of the Western Territories, referring more especially to areas west of the one hundredth meridian of longitude. From a careful study of this map it appears that there are fully 175,000 square miles of territory unexamined instrumentally, located sensibly as follows: In Southern and Southeastern California, 25,000 square miles; in Southeastern, Eastern, Northwestern and Western Arizona, 18,000 square miles; in Southwestern and Northern New Mexico, 15,000 square miles; in Southwestern Colorado, 10,000 square miles; in Western and Southeastern Utah, 20,000 square miles; in Northeastern Wyoming, 12,000 square miles; in Northwestern Dakota, 10,000 square miles; in Western Montana, 26,000 square miles; in Southeastern Idaho, 15,000 square miles; in Northwestern Northern and Northeastern Nevada, 10,000 square miles; in Southern and Southeastern Oregon, 14,000 square miles; and in Central Washington Territory, 10,000 square miles.

In advance it can scarcely be expected that a limitation as to time can be set for the prosecution to completion of this work; several seasons, however, of field and office labor will be requisite.

In view of the many interests involved, whose development may be materially improved by a continuance of these surveys, I have the honor to request the Department to call to the attention of Congress the necessity of an appropriation for the ensuing fiscal year of $75,000, founded upon the following estimate, somewhat in detail:

Pay of civilian assistants, in field	$15,400 00
Pay of civilian assistants, in office	7,300 00
Pay of guides, packers, laborers, &c., in field	15,120 00
Annual purchase of instruments	5,000 00
Annual repairs of instruments	1,000 00
Annual purchase of material and incidentals	3,500 00
Purchase of animals, and transportation accounts	10,000 00
Forage for animals	12,000 00
Contingencies	5,680 00
Total	75,000 00

The first requsite will be to establish a base line; the central line from Omaha west follows in general relations the railroad already completed.

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and a comprehensive system of astronomical points should be established at the most feasible and characteristic stations along this line, so that the astronomical positions may be obtained, using the telegraph; this system to be developed laterally as rapidly as the telegraph reaches interior localities. The expeditions should make their first rendezvous points along this line of road, and follow as nearly as possible north and south lines. I shall at an early date present to the Department a complete and detailed plan regarding the establishment of this astronomical base, and that field of surveys adjacent to, and which ought first to be taken up, to continue and complete investigations already begun along north and south lines.

To a person not well acquainted with the mountain interior of the Pacific coast, the grand advantage of a longitudinal view of its physical structure can scarcely be understood.

At a subsequent period the subject of the value of the surveys (in our western interior with which the Engineer Department have, from time to time, been charged) to the Executive Departments of the Government and to the industral interests of the country, will be taken up and discussed as an advance toward the idea of a survey or surveys of a more national character, which the best interests of the country, whether in war or in peace, will call for at no distant day.

APPENDIX A.

Report of Daniel W. Lockwood, First Lieutenant of Engineers.

WASHINGTON, D. C., *February* 28, 1872.

SIR: I have the honor to submit the following preliminary report with regard to operations connected with your late expedition through Nevada and Arizona, and carried on under my immediate charge, being governed by instructions received from you from time to time.

Having reported to you at Camp Independence, California, August 1, 1871, in compliance with telegraphic instructions from the commanding general, Military Division of the Pacific, dated San Francisco, California, May 16, 1871, I on the following day assumed command of main party No. 2 of your expedition, as directed by the following order:

ENGINEER'S OFFICE, EXPLORATIONS IN NEVADA AND ARIZONA,
Rendezvous Camp near Independence, California, August 2, 1871.

[Special Field Orders No. 18.]

I. Lieutenant D. W. Lockwood, Corps of Engineers, having reported at these headquarters, will assume entire and permanent charge of main party No. 2 of the expedition, for general instructions conforming to the spirit of paragraph 2 Special Orders No. 109, Adjutant General's Office, 18th of March, 1871, and the letter of the Chief of Engineers of March 23, 1871.

He will conduct this main line of the explorations along routes that will be from time to time designated to him, and while *en route* between rendezvous camps he will conduct his party precisely as if it were a separate expedition.

Besides his executive duties, he will take personal charge of sextant astronomical work, more particularly with a view to correct latitude stations.

Upon reaching Washington at the termination of the field labors of the explorations of this season, he will prepare at once a preliminary report of operations, to be followed as soon as practicable by a detailed report, accompanied by sub-reports of certain civilian assistants.

GEO. M. WHEELER,
First Lieutenant, Corps of Engineers, Commanding Expedition.

The time from August 2 to August 10 was employed in refitting, &c., and on the latter date the party left camp to proceed to Stump Springs, designated as the next point of rendezvous.

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Your expedition having been in the field for several months at the time of reporting for duty, I found, upon assuming command of main party No. 2, the special organization for field-work complete, and would recommend the plan adopted by you as one particularly suited to the character of the country traversed, and the nature of the operations conducted under your charge during the past season.

The *personnel* of the party was changed, from time to time, but was always kept up in such a manner as to enable me to apply myself more particularly to duties of an administrative character and to daily astronomical work.

The departments of geology, mineralogy, and natural history were represented throughout the season, and the topographical department nearly all the time was in charge of Chief Topographer Louis Nell, who merits my full commendation for the skill and energy he displayed. The party was in the field under my charge from August 2 to December 4, 1871, and during that time traveled a distance of one thousand two hundred and eighty-nine miles *en route* from Camp Independence, California, to Tucson, Arizona Territory, the general course being as follows: Down Owen's River Valley to Desert Wells; thence east to the Cottonwoods via the Amargosa River; from the Cottonwoods to Saint George, on the old Salt Lake road; thence south down the Grand Wash to the Ute crossing on the Colorado River. The passage of the river having been effected with the assistance of the boat parties, the Colorado plateau was followed to Truxton Springs, Arizona Territory. Leaving this point, Prescott was reached via Young's Spring and Bill Williams' Mountain, passing around its northern slope. From here the route to Tucson was via Camp Verde and Sunset Crossing on the Colorado Chiquito to Camp Apache; thence via old Camp Pinal to the place mentioned.

The main object of the expedition, as indicated in the letter of instructions from the Chief of Engineers, dated Engineer Office, Washington, D. C., March 23, 1871, being the obtaining of correct topographical knowledge of the area traversed, and its embodiment in an accurate map, the principal labors were in carrying out this requirement. The plan adopted was the same as in 1869, the different points along the route being located by triangulation with a Cassella theodolite, and the length of base line determined by odometer measurements.

The positions of camps, as determined by this method, were corrected by astronomical observations, the instruments used being sextant 2831 by Troughton and Simms, and mean solar chronometers. Whenever circumstances would permit of it, equal altitudes of the sun were taken for time, and circum-meridian altitudes of the same body for latitude. Generally, however, as the camps along the route were only for one night, east and west stars were taken for time and Polaris for latitude. By comparison of the results thus obtained with those determined at the main astronomical stations, where a transit and zenith instrument combined was used, the probable error of latitude, at least, can be reduced to a very small limit.

With regard to the topographical features of the area passed over, the changes were so frequent and so complete that no general description will suffice for the whole, and I therefore shall present this subject more in detail with regard to locality than would otherwise be necessary. Some idea, however, of the change in character of topographical features along the route traveled may be formed when the nature of the transition from the desert valleys and lofty, rugged, volcanic mountains

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of Southern California to the elevated plateau bordering the Colorado River, and generally Northern Arizona, is fully understood.

On the 10th of August the party left Independence and followed Owen's River Valley to its southern extremity. Desert Springs was the most southern point reached on the march to the rendezvous camp at Cottonwood Springs, Nevada; thence the line of travel was nearly due east, and most of the time followed the wagon-trail from Visalia, California, to the Ivanpah mines. This road crosses several ranges of mountains and is only available for wagons lightly loaded. In the vicinity of Camp Independence the ranges bordering the valley (that of Owen's River) are high, steep, and rugged, the Sierras on the west being in some localities quite heavily wooded. A large number of streams make down from these mountains and flow into Owen's River, and it is to these natural irrigation ditches that the valley owes its importance as an agricultural region. Many fine ranches are located all down the valley as far as near the lake, twenty-three miles from Independence, but below that point only the regular stations established at the springs along the road are met with.

The mountains grow lower as progress is made toward the south, in some places becoming mere rolling hills; this is particularly the case near the divide, between the Inyo and Coso Ranges, on the eastern side of the valley, where a broad expanse of country could be seen stretching off toward the Amargosa River and having all the appearance of being a perfect desert.

Desert Springs, one hundred and nineteen miles from Camp Independence, was reached August 15. The principal topographical features of interest noticed between Desert Springs and the Cottonwoods was the character of the valleys traversed. These valleys are simply inclosed basins, with a gradual slope to the south, terminating, in nearly every instance, in an alkali lake, generally dry. This is the case with Owen's River Valley, which, without doubt, formerly was drained into Needle Valley, where the waters, which now disappear by evaporation, and sinking into the earth at the two lakes below Independence, formerly lost themselves, leaving behind their saline constituents; and so on to the east, the presence of these flats or dry lakes indicate the localities of the sinks of waters which are drained from the high grounds of the valleys to the north and the mountains on either side.

The Amargosa River, about the course of which there has been considerable question, was carefully examined, and the result is as follows: nothing definite could be determined with regard to its source, but its general course was from the north to the south, and, making a complete change of direction about a point of rugged, volcanic mountains, near which Saratoga Spring is situated, it turns to the north again in the direction of Telescope Peak, on the western side of Death Valley; this would seem to indicate that Death Valley and the western branch of the valley of the Amargosa are the same. The results of my observations lead me to conclude that such is the case.

The general direction of the river, after turning to the north, can be followed for a long distance, running off into a deep desert valley; the mountains bordering it rise up, rugged and steep, with no foot-hills of any importance.

The country drained by the tributaries of the Amargosa extends east and west from Clarke Mountain, in the Ivanpah mining district, to Leach's Point, and the only indication of the existence of a river in this region is the bed, or wash, which marks its course. The character of the soil is such that the water sinks throughout the whole course of the

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stream, while the amount that disappears by evaporation, in consequence of the extreme heat that prevails throughout the year, is immense.

While at Saratoga Spring the thermometer indicated, between 4 and 5 p. m., a temperature of 112° F. in the shade, and at 9 p. m. the difference between the dry and wet bulb was 30°.

Nothing can exceed the utter desolation of this portion of California; the only vegetation that could be seen was an extremely scanty growth of greasewood, and even this disappears near the bottom of the valley, while for miles the river's banks are marked by a heavy deposition of various salts.

The soil on the higher ground is sandy and barren, and lower down is of a dark, reddish-brown color, and, at the time we passed, of about the consistency of stiff mortar, and yet there was no water on the surface; one ordinary rain would have rendered the course taken impracticable, and have necessitated a long detour to the south through the heavy sand.

At Saratoga Springs the water is warm and very alkaline. A scanty growth of grass about the spring afforded some relief to the eye, after the dull monotony of the surrounding desert, but not to the poor animals, who appear to derive but little benefit from it, and were growing visibly weaker each day. The water of the next spring to the east contains a large amount of salt in addition to the other ordinary alkaline ingredients, peculiar to the waters of this region. Only a very few of the animals would drink at this point, and they appeared to suffer considerably from so doing.

Ivanpah was reached on the 27th of August. No examination was made of the mines, you having expressed an intention of doing so yourself. So far as I could determine, however, the principal veins were quite narrow, and the ore in some cases very rich in silver.

Cottonwood Springs were reached August 30, without accident; from this point to Truxton Springs main party No. 1 was placed under my command with Lieutenant Lyle in executive charge. The following extract from Special Field Orders No. 20, dated September 2, 1871, will explain the character of my duties:

* * * * The interval from the departure of the river party from this camp, about September 7 to the 5th of October, will be occupied in examination by the main expedition, in Southeastern Nevada, Southwestern Utah, and to the point of crossing of the Colorado, the arrangements being somewhat as follows:

A small topographical party, in charge of F. R. Simonton, will proceed via Las Vegas Ranch to Mormon Wells, or Sheep Mountain Springs, north and east from Gass Peak, on Vegas Range; thence via head-waters of the Muddy, to join one of the main parties at the crossing of the old Salt Lake road. Another topographical party will be detached at Saint Joseph, to go via Saint Thomas, Salt Mountain, and across the Virgin Range. North and east to Saint George the main line of the expedition will continue along the old Salt Lake road as far as Saint George. From the old California crossing still another party will be detached to proceed, via Mormon Cañon, Clover Valley, Shoal Creek, Mountain Meadows, &c., to Saint George. These will be known respectively as side parties 1, 2, and 3; the selection of persons to fill these parties will be made at once. A small topographical party will ascend Charleston Peak and return to this camp.

After reaching Saint George, the examinations should be along the area about the southeast corner of the reconnaissance map of 1869, and must be selected after reaching the above-named point. Probably routes may be selected along either side of the Buckskin Range of mountains, which at this locality is supposed to be a continuation of Wahsatch.

If possible, the best camp nearest the river, on a line sensibly joining Saint George and the point of crossing, should at once be selected for the rendezvous of the expedition. From this camp, Lieutenant Lyle, in charge of a small party of observation, will go out to select a favorable point at which to cross the river, which will take place upon the boats of the river party, this point being selected prior to the 5th proximo, with

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a view to a good camp, if possible, as well as a favorable outlet toward the south. Upon the arrival of the boat party at this point, immediate information will be sent to the land parties, who will at once make a hurried march for the river, where they will be crossed, and continue on at once to Peacock Springs. A small party of observation will remain at this point, and the boat party will continue the ascent of the river, reaching the cañon at the month of the Diamond River, if possible, to which point a party of relief and observation will be sent from Peacock Springs to take the party to camp. The time necessary for this party to wait at the mouth of the Diamond River cannot be stated until at the crossing of the river.

In case the boat party cannot reach the above-mentioned point they will fall back upon the small party of observation at the crossing, which, in consequence, must be re-enforced by riding and pack animals from Peacock Springs, after the main expedition shall have reached this point.

Lieutenant Lockwood is hereby placed in command of all the land parties, and Lieutenant Lyle in executive charge of main party No. 1, while both parties are together, and in entire and absolute charge of this party when it shall be separate.

GEO. M. WHEELER,
First Lieutenant, Corps of Engineers, Commanding Expedition.

Side parties were sent to Charleston Peak and Mormon Well. The march was resumed on the 15th of September, and on the 20th the Muddy River was reached, the march across the Vegas desert, forty-six miles long, having been made without accident. From here a side party was sent off via Clover Valley and Shoal Creek, to rejoin the expedition at Saint George. The wagon was sent across the desert to the same place via the old Salt Lake road, and the main parties followed up the Virgin River, reaching Saint George the 26th of September.

The country in the neighborhood of the Muddy River having been examined in 1869, and a report with regard to it made by yourself, I shall confine myself, concerning this locality, to speak simply of the changes that have taken place since then.

In 1869 the two settlements of Saint Joe and Saint Thomas were thriving towns, as Mormon industry is understood, while West Point, only just settled, bade fair, in time, to equal them in agricultural benefits and population. These settlements are now all deserted by their former inhabitants, they having left owing to the establishment of the fact that the places mentioned were in the State of Nevada. I was informed that the people who formerly lived here are now settled somewhere in Arizona, about two hundred miles to the east of Saint George. The improvements at Saint Joe and at Saint Thomas have been sold to (so called) Gentiles, and will in time constitute valuable properties as the mineral resources of the adjacent country are opened up and markets for the products thus furnished. West Point has been left to the Indians, who show their appreciation of this act of compulsory generosity on the part of the Mormons by increased impudence (were that possible) to people passing near them.

This valley is one that, especially in the upper part, is capable of grazing a large amount of stock; all the cañons and washes leading down to the river are, as a general thing, heavily grassed, while the only water in the country around being that in the river, herding would be a simple matter.

The Virgin Mountains limit the valley of the river of that name to the east, and extend in an almost unbroken chain to within fifteen miles of Saint George, where the river breaks through them; in some parts these mountains are heavily wooded. To the west of the river a high mesa extends to the irregular, broken mountains lying east of the Mormon range. This mesa is cut up here and there by washes which carry the surface-waters to the Virgin River; formerly it was the scene of much suffering on the part of emigrants *en route* to Southern California, as the only water ever found is that which has collected in tanks, and

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these dry up during the summer. Two roads cross it; one direct from Saint George, striking the Muddy near the old California crossing, and one which follows the river down to the Virgin Hill, and thence over to Saint Joe. This hill is practically impassable since the Mormons have abandoned the Muddy settlements, on account of the rain having washed off all the earth, leaving only the bare strata of rocks, which terminate in an abrupt staircase formation, extremely difficult even for loose animals.

Lieutenant Lyle was sent from Saint Thomas eastward over the Virgin Range of mountains, to find a suitable place for a temporary camp near the river, where the main parties might rendezvous until your arrival up the river at the point of crossing. A point near Pah-Koon Springs was selected by him as answering the above requirement.

The camp at Saint George was broken on the morning of October 1, and leaving Lieutenant Lyle in charge, I pushed forward to the river with a small party to select a point at which the crossing should be made. The route taken was down the Grand Wash, or near it; the Mormons had broken a sort of wagon-trail at some time in the past down this wash or cañon, and this was followed so far as practicable. I had expected, from previous information, to find a high range of mountains designated as the Buckskin Range, lying to the east of the Virgin Mountains, and limiting the area drained by the Grand Wash in that direction; instead, however, only an elevated mesa was seen, which near the river assumed a steep and rugged character, occasioned by the constant wash, in past ages, of waters seeking a lower level in the bed of the Colorado. For twenty miles north of the river the western edge of this mesa is nearly vertical, and curiously marked with bands of different colors, showing the stratification. To the north this mesa joins a vast wooded plateau, which extends to what is called Hurricane Valley, on the Virgin River, forty miles above Saint George.

Your opportune arrival with your boats the morning after I reached the river, rendered it unnecessary for the train to remain any length of time at Pah-Koon Springs, and on the morning of October 6th everything was across the river and ready to proceed to Truxton Springs. The freight was ferried over on the evening of the 5th, requiring only four hours, and the animals swam the stream the next morning. One horse had a leg broken among the rocks; otherwise there was no accident of any kind. Truxton Springs were reached on the evening of October 10th, where the detachment of C troop, Third Cavalry, detailed as escort, had already arrived.

The first march out from the river was to Tin-na-kah Springs, near the foot of what is known as the Colorado Plateau. The trail to it leads up a broad wash, the formation continuing for some distance the same as on the river. The walls of the cañon are nearly vertical for a long distance, and are marked by the different strata in various colors; gradually, however, the country assumes an alluvial character, the sandy washes and the sterile gravel mesas giving place to grassy plateaus and occasional mesquit, and then little clumps of cedars attest the increased fertility of the soil.

Several rugged peaks and ridges are found near Tin-na-kah, and all are more or less volcanic in their formation and character. Ten miles from the springs the trail strikes up on to the main plateau. From here a fine view of the country north of the Colorado could be obtained. The North Side Mountain, a high conical peak, could be seen standing out alone on the vast mesa beyond the Grand Cañon; but no range that occupied the locality assigned to the Buckskin Mountains could be

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observed. I am inclined to believe that the name has been erroneously given to the edge of the plateau, which extends on to the north from the mouth of the Grand Cañon. This vast plateau extends over the whole of Northern Arizona, from near Hualapais Valley to the east. Throughout its whole extent, at least that portion which I passed over, the rolling hills are, as a general thing, covered with grass. The trail, after attaining the summit of the plateau, follows along its western edge, bordering Hualapais Valley until within eight miles of Truxton Springs, at which point it descends a steep hill, and gaining a sandy wash lower down, follows it out to near its mouth, where the springs are situated. Upon my arrival here I found the rations that were to have been there had not arrived. The two wagons that had been sent along to furnish transportation for the escort from Hualapais were immediately despatched to Camp Mohave for supplies, and Lieutenant Lyle, with a small escort, went on to Hualapais to bring the mail and obtain such articles as were most needed.

Dr. Hoffman was sent to the mouth of the Diamond Creek, but by some mistake did not take the right trail, and went on to Young's Spring. On the 18th Mr. Loring came in, bringing a dispatch from you, and on the following morning I took charge of a small party of relief to meet you at the mouth of the Diamond Creek. The trail to that point leads up a box cañon from Truxton, and passing over a rolling divide, gains a side cañon, which joins the Diamond Creek about two miles from its mouth. Peach Spring is situated about midway. The cañon leading into Diamond Creek is of the same general character as all the Colorado cañons, having steep, rugged walls, in some places nearly vertical, and unbroken for a height of one thousand feet or more. In the vicinity of Peach Spring the slopes are wooded with cedar, and the whole country traversed covered with grass, except in the gravelly beds of the washes. On the 21st the party started back, reaching Truxton on the evening of the 22d.

FROM TRUXTON SPRINGS TO PRESCOTT.

On the 24th my party started for Prescott, moving out nearly due east, following for three days the guide-stakes established by the railroad surveying party, which had preceded me only a short time at Truxton. The country was found to be a series of terraced plateaus, each one to the east growing in height, and being gained by following up an easy grade through cañons leading to their summits; these different table-lands have all the appearance of being regular mountain ranges when seen from the west; the slopes in many cases are covered with timber. No water was found after leaving Young's Spring until the volcanic country, nearly northwest from Mount Floyd, was reached. Here the plateau is cut up by box cañons in the volcanic rock, and in many of them large reservoirs have been formed where the water collects during the rainy season and generally remains throughout the year, the temperature not being sufficiently great to evaporate the whole.

Mount Floyd is an irregular mountain north of the Juniper Range, and is surrounded on all sides by strong evidences of volcanic agency. The whole country is strewn with eruptive matter, and cut up by narrow box cañons, which are impassable except at certain points; the general direction of all these old water-beds was to the south, about the southern point of Bill Williams' Mountain, emptying into the Verde. The *Red butte*, mentioned by Ives, could be seen standing out by itself

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to the north, and beyond it what appeared to be an elevated table-land, considerably higher than the one upon which we then were.

The trail led about to the north of Bill Williams' Mountain, until the San Francisco Mountains and Sunset Crossing road to Albuquerque, New Mexico, was reached; this was then followed out through Chino Valley to Prescott. Mr. Gilbert, chief geologist, ascended the mountain (Bill Williams') with a small party. Barometrical observations to obtain its height were taken, and a careful examination of the character of the formation made by that gentleman, the results of which will appear in his report. The foot-hills all about, and the mountain itself, are covered with a heavy growth of pine, and occasional oak thickets are found.

The road, after leaving the mountain, gains the valley beyond by a series of very heavy grades, crosses Hell and Rattlesnake Cañons, of volcanic origin, and breaking through a rough, rugged range of hills, gains Chino Valley; from this point to Prescott there is a fine track. The Juniper Mountains, lying to the southwest of Bill Williams, are low, rolling hills, and densely wooded. In the report of Lieutenant Ives this country is called the Black Forest. To the east of Chino Valley are the Black Hills, very rugged, with extremely steep slopes; these hills constitute one of the many strongholds of the Apache-Mohave Indians. The country to the north is cut up with box cañons which extend to the Verde beyond, and the approaches on all sides are so difficult that in nearly all cases pursuit of the Indians in this vicinity is attended with very meager results.

Prescott was reached on the night of October 31, where I found Dr. Cochrane had already arrived with main party No. 1.

PRESCOTT TO CAMP APACHE.

Leaving Prescott on the 10th of November, main party No. 2 took the road leading out through Agua Fria Valley, and crossing the Black Hills descended into the valley of the Verde River. The mountains limiting this valley are quite high, and very rugged. The eastern range may be considered as the edge of the vast elevated plateau already spoken of, and the summit once gained, the scene presented is nearly the same as that farther to the west. The prevalence of loose volcanic matter, scattered over the country, constituting what are termed Malpais Plains, renders the traversing of this section a very difficult matter during the seasons of rain; the same irregular formation of mesa ridges is observed here as to the west of Bill Williams' Mountain.

Sunset Crossing was reached on the 17th of November; just before reaching this point, and while on the summit of a slight rise in the mesa, the view in every direction showed only the vast rolling table-land, with occasional ridges, except toward San Francisco Mountain to the north, which appeared to rise up abruptly from the plain.

The Colorado Chiquito was followed as far as Leroux Fork, where the road to Camp Apache leaves the Santa Fé road, and, turning to the south, breaks through the Mogollon Mountains, reaching the valley of the Salt River and its tributaries. These mountains constitute the water-shed between the Little Colorado and Salt Rivers, and may be described, generally, as a low, rolling range, covered with loose volcanic matter, and heavily wooded with pine. The appearance of this range changes entirely when viewed from the south, as the elevation of the plateau to the north is so great that the descent from it to the lower country of the Salt River and tributaries, by the abrupt slopes peculiar to the southern limit of the Colorado plateau, gives all the features that

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are observed in ordinary mountain ranges, so that, while viewed from near the Little Colorado, the Mogollon Mountains are merely heavily wooded, low, rolling hills; from the south they appear to break out as a veritable range of high mountains. The White Mountains could be seen in the distance, but no near approach was made to them.

At Camp Apache the Colorado plateau proper was left by my party, and thence to the Gila the trail leads over the Natanes mesa, and the Apache and Pinal ranges of mountains. The country to the southwest of the camp is rough, and broken by deep cañons, which have their outlets in the Salt, or Prieto, River; the latter is the name given to the Salt River above the point where its course lies through the salt-beds that completely change its character. At the point where the trail crosses it, the river breaks through a deep cañon, the southern bank being 1,950 feet above the water; reaching the summit, a broad, rolling plateau is seen, which is a continuation of the Natanes Mountains. To the west, the irregular line of the opposite wall of an extensive box cañon was readily discerned, where the river's course is extremely tortuous. The walls appeared to be red sandstone; the country beyond, to the west, was very much broken and cut up by vast cañons, which headed off in the direction of the Sierra Ancha, and particularly near Sombrero Butte. The confusion created by nature was truly wonderful.

The Natanes mesa is a broad rolling plateau, cut up by cañons leading into the Salt River; these are in most places practically impassable and have to be headed. Descending, the trail leads down into the valley of the west fork of the San Carlos River, which heads within a few miles of the Salt River and empties into the Gila. Crossing this, a steep, rugged range, known as the Apache Mountains, was next crossed, and again we were in the country drained by the tributaries of the Salt River.

The Apache Mountains form a short range, which extends from the mouth of Pinal Creek about twenty miles to the east, slightly turning to the north. The slopes on both sides are extremely steep, and the foot-hills terminate in long, gently sloping ridges, formed by the deep washes which run toward the branches of the San Carlos on the north and Pinal Creek on the south.

In June last, while making a reconnaissance in this country with Captain Evan Miles, Twenty-first Infantry, the region where the mountains head, on Salt River, was visited; the range was found to continue unbroken to within a few miles of the river, where a remarkably steep slope leads down to a broad, sandy wash, running off to the west, and reaching the river nearly due south of Sombrero Butte. Pinal Creek was followed up to where it heads in the mountains of that name, which were crossed by an extremely difficult trail leading across Papoose Cañon on Pinto Creek. The trail then leads through a rough, broken country, covered with granite rocks and bowlders, to Camp Pinal, (abandoned,) which is situated on the head-waters of Mineral Creek, a tributary of the Gila. Onward from this point, the evidences of volcanic agency were everywhere encountered. The cañons of Mineral Creek are 200 or 300 feet deep, and form almost perfect types, in places, of what are known as "box cañons;" their walls are nearly vertical, and the rock in which they are formed is generally basalt, occurring in huge columns, while the surrounding country is strewn with lava and immense bowlders. Everywhere the eye, at first glance, sees only broken, rocky ridges and deep gulches, which appear impassable by the ordinary means of transportation. After leaving the Pinal Mountains, which have a regularity of form quite remarkable, the ranges crossed were much

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broken, being cut up in all directions, with no regular trend. This character extends through to the Mazatzal Range, and in fact nearly to the Verde River.

A curious point, called Weaver's Needle, is seen off to the west, and appears in the distance to be simply a huge rock, as its slopes are too steep for earth or even loose *débris*.

Superstition Mountain, about twenty miles west, is remarkable from the peculiar marking of the stratification by broad bands of various colors, which extend for miles and maintain an almost perfect parallelism. The face of this mountain is formed in regular steps or terraces, often several hundred feet in height.

The valley of the Gila is through a gravelly mesa, and varies in width from a few hundred yards to several miles. I have seen sections through this mesa cut by the water up near the mountains, and for thirty feet the sand, gravel, and rocks were arranged in regular order, the gravel and rocks being cemented together, so that the walls were nearly vertical.

From Florence, where I first struck the Gila, the road to Tucson, via the Picacho, was taken. The so-called Picacho Pass is a broad opening between two separate ranges of volcanic mountains, having no relation to each other, except the accidental circumstance of having their axes in nearly the same line. The pass, without doubt, is merely an extension of the mesa. The mountains rise abruptly from the plain, having no foot-hills, and no signs are visible of anything like a connection between them having ever existed. The well at the station, eight miles from the Picacho, is nearly 200 feet deep, and the proprietor informed me that the water-vein very much resembled an underground river of considerable size. As this is near the old line marked down as the underground course of the Santa Cruz, it is quite likely that the well, by good fortune, has struck it.

From this point the road passes over a vast plain, having small alkali flats scattered along it, until reaching the Santa Cruz River, which it crosses and follows to Tucson. The hills and mountains in the vicinity have a rugged, volcanic aspect, and, as a general thing, rise abruptly from the plain, with no foot-hills of any importance.

AGRICULTURAL LANDS.

The amount of agricultural land in Owen's River Valley is limited at present by the facilities for irrigation. In consequence of the river's course being in soft alkali soil through the middle and lowest part of the valley, its bed has sunk so far below the surface of the ground that its waters are not available for irrigation, except near its source. The small streams that rise high in the mountains, and flow down and across the valley, are thoroughly utilized, and it is to them that this region owes its importance, agriculturally speaking. Below the lake the valley is a barren desert, and, with but one or two exceptions, there is no land available for cultivation.

Passing east, the same general character obtains until the Cottonwood Springs are reached, where the Indians cultivate a few acres, raising pumpkins, melons, and corn. No white man has deemed this place as affording sufficient prospects of success to justify even his settling there for any time. About the Vegas Springs two ranches have been located recently, with good success to the settlers. Considerably more might be taken up were the supply of water more extensive. In addition to what was under cultivation at the Vegas ranch in 1869, about 80 acres

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may be mentioned as having been planted during the last year, but the proprietors state that the supply of water would be insufficient for any more. Peach-trees have been started here and are stated to produce finely.

The amount of land available on the Muddy and Virgin Rivers has already been estimated by yourself, and it is probable that a considerable deduction for the extent actually under cultivation at present should be made, since the Mormons, who were compelled to utilize every foot of ground that could be irrigated to support their surplus population, have abandoned the country.

In the vicinity of Saint George there are about 2,000 acres under cultivation, all that can be irrigated, in fact. A project was started, some years ago, to change the course of the Virgin River, and by carrying it, with a slight fall, higher up toward the table-lands, open up a vast extent of country which, except in certain seasons, is only useful on account of the scanty pasturage it affords. This scheme was baulked, after a vast expense had been incurred, by difficulties encountered in tunneling through a small range of mountains. The grand ditch was to start thirty or forty miles above Saint George, and, if successful, would have increased by ten-fold the amount of country now under cultivation.

There are quite a number of small, scattering towns near Saint George, but I am unable to state aught with regard to their facilities for agriculture; only those in the immediate vicinity are included in the above estimate.

From Saint George to Chino Valley, north of Prescott, only a few Indian farms were seen; those may consist of from twenty to two hundred hills of corn, a few pumpkin-vines, melons, and squashes; they do not, as a general thing, average much more, and what they do produce is, for the most part, eaten before reaching maturity.

Chino Valley has about 3,000 or 4,000 acres extending to near Prescott, and the principal product is corn; potatoes and onions are raised to some extent.

The next arable land met with was in the Agua Fria Valley, the principal ranch being that of Mr. Bowers. I should judge that from 1,500 to 2,000 acres are here cultivated. Corn is mainly the staple product.

The Gila bottom can be cultivated throughout when the supply of water obtainable from the river is sufficiently great. A broad strip on each side of the river has been taken up by farmers, and from three miles above Florence to Maricopa Wells the country is being utilized; the principal product now is barley, in consequence of the large amount required at the various military posts throughout the country. At the Pima villages (Indian reservation) a considerable quantity of wheat is annually produced. At Gila Bend a large irrigation ditch, fifteen miles in length, is being taken out, and, when completed, will open up a large tract of valuable land. At Phœnix, on the Salt River, about 10,000 acres are under cultivation, and here companies have been formed to construct proper ditches, &c. The lands along the rivers produce very large crops of barley; and the markets are generally good.

All, or nearly all, this region was formerly cultivated by a race which has entirely disappeared from the country. This is shown by the ruins of vast acequias located, in some instances, where farmers of the present day have never thought of going. At Phœnix, where the irrigation ditches are on a very extensive scale for modern enterprise, I

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have seen the ruins of a vast canal three or four miles outside of any that have yet been attempted in this vicinity. A project is on foot, however, to open up the old acequia, and when this is done a large extent of country will be opened up, giving ample security for success to many more settlers.

Growths of mesquit have sprung up since the former inhabitants left this country, in some places forming impenetrable barriers for miles along the rivers; these having been cleared away, the ground, in all cases, is found prepared for irrigation, perfectly smooth, with the slopes properly arranged.

With regard to the available land about Tucson I can state nothing, as my stay there was only for a few hours, and my opportunities for obtaining information on that subject consequently limited.

GRAZING LANDS.

The grass found in Owen's River Valley is either that which grows in the bottom-lands or the scattered growth found in the foot-hills and mountains. The grass on bottom-lands that have been cultivated is of very fair quality, but generally is of an alkaline character, on account of the alkali matter in the soil. The bunch-grass in the mountains is admirably adapted to animals getting but little or no grain.

On the route traveled by myself through Southern California but little grazing was met with until near Ivanpah and Cottonwood Springs. Here there are vast tracts covered with sand and bunch-grass; along the Muddy, particularly near West Point, there is a fine opportunity for an enterprising stock-raiser.

About Saint George there is but little grass, but at the head of the Grand Wash ample range for a large number of animals exists.

The Colorado plateau, particularly that portion over which my route extended, is covered with a fine growth of nutritious grasses, and in time, when the Indians are sufficiently subdued to permit of it, this whole country will afford as fine facilities for raising stock as any country I have ever visited on the Pacific slope. The supply of water is sufficient for vast herds, and not being scattered as in some localities, the stock could be easily managed.

The whole country along my route of travel, from Prescott to Camp Pinal, was through grassy uplands of vast extent. What grass is found upon the mesas bordering the Gila bottom is very excellent in quality and stock thrive well upon it. The great difficulty is that the stock is rarely driven from the lowlands in consequence of the danger apprehended from the sudden raids of Indians who watch the herds from the mountains and drive them off with little or no difficulty. Pursuit generally avails little, and the only satisfaction the owners usually have is that caused by finding the remains of an extensive feast that has been served up at their expense.

WOOD-LANDS.

The valleys of Southern California and Nevada sustain only a scanty growth of greasewood, and in some localities sage-brush. Generally, however, in the Sierras and the more elevated mountains white-pine and scrub-cedar are found. This obtains in the Clarke Mountains at Ivanpah, and in the Spring Mountains at Potosi, and to the north.

In the mountains about Saint George considerable pine is found, and at the head of the Grand Wash a dense growth of cedar.

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The Colorado plateau is densely wooded in some localities. Near the western limit thickets of scrub-cedar and some pine are found. The Black Forest, mentioned by Lieutenant Ives, is a dense growth of juniper.

Near Bill Williams' Mountain the timber is principally pine with a few scrub-oaks. Along the road from Camp Verde to Camp Apache, especially near the edge of the Colorado plateau, heavy growths of pine and juniper are met with.

Camp Apache is in a heavily wooded district. The Mogollon Mountains and the country near the east and west forks of White Mountain River are covered with pine and juniper. The Natanes mesa is also well wooded, and the Pinal Mountains, farther south; the creek of that name is bordered with cottonwoods, and near its source a few oaks are found, and generally the mountain country north of the site of Camp Pinal is more or less heavily wooded with pine and juniper.

In the country to the south and along the Gila, cottonwoods are found near the river, while mesquit and palo verde grow farther back, on the edge of the mesa; beyond this only stray mesquit and greasewood are noticed, and an occasional palo verde.

MINERAL LANDS AND MINES.

The principal mines along the route were those in the Slate Range district and the Johnson district, Ivanpah, the mines on Lynx Creek, near Prescott, and the mines in the Black Hills, near Camp Verde.

The Slate Range mines are so named from the mountains in which they are situated; they have been deserted for several years in consequence of the failure of the company working them. The principal and best yielding are the black ores, known as stromeyerite and stedefeldtite; the ledges are narrow and between slate walls. One tunnel had been run 500 feet, but failed to reach the ledge at that distance. Machinery for milling gold-ore, found near, have been erected, but the results obtained were not remunerative, and, the funds of the company being soon exhausted, the whole district was abandoned. Some of the former owners now state that if the amount expended in working low-grade gold-rock had been applied properly to the development of the silver leads the result would have been different. With regard to this I cannot give an opinion, as the imperfect knowledge acquired by me of the locality of these mines was insufficient to enable me to find them.

The Johnson district is near Desert Springs, and all the leads discovered are composed of lead and copper. Nothing has been done toward developing the district; no assays have been made, and the mines are not valued very highly. Several specimens were obtained and have been added to your collection.

The Ivanpah mines having been visited and examined by yourself, no report from me is necessary.

The mines near Prescott, on Lynx Creek, are worked only for free gold. But little has been done here except to prospect in a rude manner. The old Mexican arrastra is used, and with it the ore yields from $20 to $45 per ton. Some of the shafts are down 25 feet and show well-defined walls nearly vertical.

The vein-matter is very much disintegrated, most of it crumbling easily in the hand with a slight pressure. Assays have been made several times by assayers at Prescott, but their results were so unsatisfactory that they were not given. The whole bed of the creek has been dug over, and in some places quite rich deposits of placer gold have been found. The prevailing opinion is that the placer diggings have all been

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worked over once, probably by the race of beings the record of whose existence consists now only in the curious ruins occasionally found and the fragments of pottery scattered over the country.

At present but very little is being done here; a few prospectors who are able to obtain sufficient water are taking out a little gold, but only enough to purchase supplies with which to live. The Indians have killed several miners, and small parties are consequently deterred from locating here. Nearly all the creeks and ravines near Lynx Creek show gold in small quantities, not enough, however, to cause any extensive operations to be inaugurated; and the few mills that have been started are now deserted and have been for some time. With improved methods of working these deposits they may in time be made to pay, but the supply of water is limited, and this will always prove a great drawback to anything like extensive operations.

NATURAL HISTORY.

Dr. Hoffman accompanied my party as naturalist from the crossing of the river to the termination of the field-work at Tucson. Throughout the season Mr. Bischoff was collector in natural history. The specimens obtained by him are very extensive, comprising many that are new.

GEOLOGY.

From Camp Independence to Cottonwoods, and from Truxton Springs to Prescott, Mr. G. K. Gilbert, chief geologist, accompanied my party as geologist. Mr. Marvine had charge of this department from Prescott to Tucson. The reports of these gentlemen will, I understand, be given you.

METEOROLOGY.

At all rendezvous camps hourly observations were taken, as follows: Barometric readings, using cistern and aneroid barometers; wet and dry bulb thermometric readings were also taken; the direction of the wind was also observed, and its force as determined with an anemometer. The general record also included the character and amount of clouds, time of beginning and ending of rain and snow storms, and the amount of fall. Also such phenomena as would be included under the general head of meteorological data.

At ordinary camps, observations were taken at 7 a. m., 2 p. m., and 9 p. m., or where the time of going into or breaking camp was such as to render this impossible, observations were taken upon arriving and upon leaving, and the hours noted. Observations were taken while on the march at the topographical stations with an aneroid, carefully compared with a cistern barometer.

MEANS OF COMMUNICATION, ROUTES FOR ROADS, ETC.

The road from Independence to Desert Wells is the regular stage-route from Los Angeles to Owen's River Valley. The one from Visalia to Ivanpah is one over which but very little travel has ever passed.

Burnt Rock Cañon will have to be very much improved by lessening the grade, which can only be accomplished by blasting out the solid rock, before heavily-loaded wagons can attempt this route with any prospect of being able to get through.

The bottom of the Amargosa is impassable except after the hot

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weather has dried up the soft alkali mud; this limits the availability of this route to a very few months in the year. At other times the trail through the sand-hills to the south would be the only course that could be taken. From this point to Ivanpah, the heavy sand in places will always be a great drawback, but need not be considered as closing the route. Nearly every road in Southern California and Nevada may be described as very good or very bad; the former obtains when traversing the gravel mesas, and the latter when following up the sandy washes or in crossing, in wet weather, the numerous alkali flats in this region. The road from the Cottonwoods to Saint George is no exception to this rule, and the vast amount of freight that has been transported over the old Salt Lake road, from Los Angeles to interior Utah, is sufficient proof of the availability of this route.

To establish a road from Saint George south to the Ute crossing for heavy wagons would require considerable labor; first, in getting over the mountains just south of the Virgin where the grades are remarkably steep and rocky; and again to get out of the Grand Wash and into the smaller one which reaches the river two miles below the Ute crossing. The road, to be available, would have to leave the Grand Wash, as at its mouth the landing on the opposite side of the river is not practicable.

From the river to Truxton Springs there would be but little difficulty encountered, and that only in ascending the plateau beyond Tin-na-kah Springs, and in descending the mountains into the wash leading into Truxton. From here a regular road leads down to the south, striking the Mohave and Prescott road near the Cottonwoods, five miles west of old Camp Willow Grove.

The route from Verde to Camp Apache is traveled at all times except when blocked by the snow in winter.

During the rainy season the Malpais region from Beaver Creek over the mountains is very heavy, and only lightly-loaded teams can get through without encountering considerable difficulty.

There has been no feasible route found from Camp Apache to Tucson via Camp Pinal, except for pack-trains.

INDIANS.

After leaving Owen's River Valley no Indians were seen until Ivanpah was reached; here there are quite a number, who, for the most part, are employed by the miners to carry water to the mines. This idea of labor is not applicable to the men, as they as a general thing are perfectly contented to enjoy the fruits of the labors of their squaws; some few, however, who have been for a long time with the whites, work at times, but it is safe to state only when compelled by hunger. They belong to the tribe of Pi-Utes, or Pah-Utes, as do also the Indians at Cottonwood Springs, Vegas, along the Muddy, and at Saint George. At present those at Ivanpah are perfectly harmless, but only from realizing the superiority of the whites over them. Two years ago, when the mining camp was occupied by only a few men, the majority having gone to Visalia and Los Angeles for provisions, they entered the town and compelled the few people left behind to cook for them what little in the way of provisions was left. Fortunately the wagons arrived while this was going on, and the Indians were driven off; they returned in a few days, however, and asked for food. At the time I passed through I should judge there were nearly one hundred in all encamped about Ivanpah.

At Cottonwood Springs and at Las Vegas there are quite a large number, who move backward and forward between the two places, according

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to their fancy. They have small farms or gardens, and besides the corn, pumpkins, melons, &c., raised by themselves, obtain scanty supplies from the Vegas ranches for what little work they do. Occasionally they commit some depredation, but the prompt and severe punishment they always receive from the whites, when found out, as a general thing keeps them quiet. I should estimate that these met with at Cottonwood Springs and Las Vegas would number about two hundred. They lead a life of perfect indolence, with a few exceptions, and seem to prefer their present precarious mode of living to one the security of which must depend upon their own exertions and labors.

But little change has taken place among the Indians along the Muddy, except that, not feeling the restraint formerly put upon them by the presence of the Mormons, they are now extremely impudent and bold. They are great beggars, and on several occasions strongly hinted their intentions of taking what they wanted if their demands were not complied with; this, however, was never attempted, and I think it only requires the presence of five or six determined men to keep them at a respectful distance. They are well supplied, and the facilities afforded them for raising grain are not equaled by those of any other band in this portion of Nevada.

The Indians at Saint George are quiet and peaceable, many of them working regularly for the Mormons. Long and continued association with the whites has accomplished this perfect change in their character. It was observed, however, that the converts had generally been raised from infancy away from immediate contact with their own people. Many of the Indians referred to have horses and ponies, and all are usually well clothed.

At Tin-na-kah Spring a deserted rancheria with a small garden was seen, but no Indians were met until Cañon Springs were reached; these belonged to the Hualapais tribe, and seemed very much frightened at seeing us. They had all left their rancherias when we came up, and were out in the hills; they came in after awhile and began begging. Between Tin-na-kah and the crossing of New River, several broad, well-beaten trails were seen, all seeming to converge toward some point on New River, near the Colorado. I afterward learned that this locality was formerly a great hiding-place for the Hualapais, when hard pushed during the war which resulted in their being partially brought to terms, so much so, in fact, that many of them now submit to receiving from the Government, as gifts, that which they formerly insisted upon taking in their own way.

The Hualapais at Truxton Springs are not so wild as those seen at Cañon Springs. They nearly all are fed at Beale Springs by the Government, and are consequently more accustomed to the sight of white men. I can give no estimate of their number, as they were coming and going all the time we were there.

To the east, in the vicinity of Diamond Creek, a small band was met with, known as the Seviches. They are a finely developed race, bold and warlike, and regard the approach of the white man into their territory with jealous distrust. They always left their rancherias as we approached and hid themselves in the hills; they would afterward come suddenly into camp, and, although manifesting a seemingly great desire to shake hands with every one, would evince their doubts by always asking what we wanted, coupling with this question a rather peremptory request for tobacco. These Indians have gardens at Peach Spring and at the head of Diamond Creek. Their country is well supplied with

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game, and they all appeared capable of taking care of themselves. They did not allow the squaws to come in sight at all.

No Indians were seen again until reaching Camp Verde, although throughout Chino and Agua Fria Valley they frequently commit depredations. The ranchmen always take their rifles with them; and it is a common occurrence for herders to be picked off, or men shot, while at work in the fields. The Apache-Mohaves roam through this region, and their country extends east to the mountains beyond the Verde River. At the post of that name several hundred were being fed. Quite a large number were found at Beaver Creek, and although then *en route* to the post to get their five days' allowance, showed great insolence to a small advanced guard that preceded the party. I have since learned that these Indians have all left the reservation.

At Camp Apache nearly twelve hundred were being fed, and seemed peaceable and well contented. Last May, however, they drove off the herds, and for a long time remained away from the post. These Indians belong to the Coyotero, or White Mountain Apache tribe, and have committed many depredations in this country, and even as far south as the roads leading out from Tucson.

The next tribe to the south are the Pinal Apaches, who live in the country about the Pinal Mountains. None of them were seen; they are very wild and warlike, refusing to go upon reservations or have any communication whatever with white men. Their country is very rough, and scouting parties encounter great difficulties in hunting them.

The general character of the Apache Indians is too well understood to require any further mention from me than that my experience in their country leads me to conclude that their bloodthirsty nature has not been overdrawn. In time, perhaps, civilizing influences might render them less wild and barbarous than they now are; but this change I do not consider as likely to happen except in the case of those taken at an early age from their own people.

In conclusion, I would express my indebtedness to the different assistants who were with me for their co-operation and valuable aid in bringing the labors of the season to so successful a termination.

Respectfully submitted.

DANIEL W. LOCKWOOD,
First Lieutenant of Engineers.

Lieutenant GEO. M. WHEELER,
Corps of Engineers.

APPENDIX B.

Report of Second Lieutenant D. A. Lyle, Second United States Artillery

UNITED STATES ENGINEER OFFICE,
EXPLORATIONS IN NEVADA AND ARIZONA,
Washington, D. C., March 5, 1872.

SIR: In compliance with your letter of instructions, dated February 15, 1872, I have the honor to submit the following preliminary report:

I assumed command of the escort, a detachment of twenty-five men from Troop I, Third United States Cavalry, and also of main party No. 2 of the expedition, by virtue of the following orders:

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Special Field Orders No. 10.—Extract.

UNITED STATES ENGINEER OFFICE,
EXPLORATIONS IN NEVADA AND ARIZONA,
Camp near Belmont, Nevada, June 23, 1871.

* * * * * * *

I. Second Lieutenant D. A. Lyle, Second United States Artillery, having reported in obedience to paragraph I, Special Orders No. 98, Headquarters Military Division of the Pacific, is hereby placed in command of the escort, and, until the arrival of First Lieutenant D. W. Lockwood, Corps of Engineers, in charge of party No. 2 of the exploration.

GEO. M. WHEELER,
First Lieutenant, United States Engineers, Commanding Expedition.

Special Field Orders No. 16.

UNITED STATES ENGINEER OFFICE,
EXPLORATIONS IN NEVADA AND ARIZONA,
Rendezvous Camp near Belmont, Nevada, July 2, 1871.

Main party No. 2 of the exploration, under command of Second Lieutenant D. A. Lyle, Second United States Artillery, will proceed at daylight to-morrow (Monday) morning, *en route* to Camp Independence, California, on the trunk-line selected from this point to the rendezvous camp at the above-named station. He will be furnished with a copy of the letter of instructions from the Chief of Engineers of the 23d of March, 1871, and will, in all respects, adhere thereto, conducting his party in the same manner as if it were a separate expedition. Fifteen days will be allowed to reach Camp Independence, and *en route* special attention must be given to the examinations in the contiguous mining districts.

He will be called upon for a report of his trip.

By command of Lieutenant Wheeler.

D. A. LYLE,
Second Lieutenant, Second Artillery, Adjutant of the Expedition.

Accordingly, on the morning of the 3d of July, I left the rendezvous camp in Meadow Creek Cañon, north of Belmont, Nevada, and set out upon the march

FROM BELMONT, NEVADA, TO CAMP INDEPENDENCE, CALIFORNIA.

Following down Meadow Creek Cañon for several miles we struck the stage-road from Austin to Belmont; thence crossing the Toquima Range and Ralston Valley, in a southwesterly direction, we encamped at Cedar Springs (Baxter's Station) on west side of valley, having marched thirty and a quarter miles. Here we found plenty of wood and good water, but very little grass.

Ralston Valley is from eight to twelve miles wide, a sandy, gravelly, stony desert, with no vegetation except wild sage. At this point a wagon-road comes in from the southeast from Reveille.

The next day made a short march of eleven miles to Indian Springs, (San Antonio,) in Big Smoky Valley. Here we found plenty of water, slightly brackish, little grass, and no wood except sage-brush. The route to this point was upon a wagon-road, from Belmont to San Antonio and Fish Lake Valley. The road from Cedar Springs lies over a low range, through an excellent pass, bordered with plenty of nut-pine and cedar, but no grass or water. There are two quartz-mills at this point, both lying idle; some arable land, but natural facilities for irrigation are limited. If irrigated the soil would be productive. Jack rabbits and mountain quail the only game seen.

My orders being discretionary with regard to everything except time and general direction of line, I concluded to detach at this point a small topographical party, consisting of Acting Assistant Surgeon W. J. Hoffman, United States Army, in charge, one topographer, two civilian assistants, with a packer, guide, and soldier, to visit San Antonio mining district, and follow down the west side of the San Antonio Range, pushing their investigations to the east and southeast, and passing to the east

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of Lone Mountains to Montezuma; then crossing the mountains, after visiting the Montezuma mines and entering Clayton Valley, this party was to join the main party at Silver Peak, while myself with the latter party crossed the Smoky Valley Desert to the west and southwest of Lone Mountains, via Desert Wells, where, instead of crossing the low summit of the Toyabe Range to the westward into Fish Lake Valley, as previously intended, we would move southeasterly into Clayton Valley to Silver Peak, in order to facilitate the junction of the detached side party, presuming that the topographical and physical results would be more fertile on this line than they could possibly be by crossing directly into Fish Lake Valley to the north of Red Mountains. This presumption was fully sustained by subsequent results.

On the 5th the main party crossed this desert, reaching Desert Wells at 5 p. m., having made thirty-two miles, very hot and dusty, both men and animals suffering severely from thirst, the result of drinking brackish water at Indian Springs. Here we found three springs filled with slimy mud, from which we could get no water. About half a mile to the northeast was a large hole containing a few gallons of water.

We concluded to bivouac here for a few hours to rest and feed the animals preparatory to making a night march to Silver Peak, twenty-five miles distant. By dint of considerable digging, at which we all took turns, we procured enough water to supply our wants and those of the animals partially, though it was very brackish and alkaline.

The country traversed this day was a sandy desert, covered with wild sage, and toward the lower end of the valley interspersed with hard, white alkali flats, destitute of vegetation. Jack rabbits, lizards, and beetles were the only specimens of animated nature seen. Owing to the cloudiness of the weather and the darkness it was not until 2 o'clock a. m. that we resumed our march to the southeast, and skirting for several miles an alkali lake, (dry,) some twelve miles long and from one to six miles wide, we passed up a rocky wash and crossed a low ridge or divide connecting Red Mountain Range with Lone Mountains. This ridge was composed of volcanic remains—lava flows, extinct volcanoes, volcanic ashes, scoria, and basalt; native sulphur and alum being also met with.

Entering Clayton Valley we passed a very perfect volcanic cone of recent date, but now extinct, and striking a salt marsh, twelve to fifteen miles long and from four to eight miles wide, we arrived at Silver Peak. Here is a cluster of saline springs, mostly warm, and of various degrees of saturation, one of which was constantly boiling; the waters were impregnated with salt, lime, borax, and sulphur. Another very remarkable spring was one out in the salt marsh about half a mile, which was nearly fresh, and the water quite cold. The white surface of this marsh was broken by two or three rocky *buttes*, upon which trilobites and other fossils were found; toward the lower part of the valley were shifting sand-hills.

Here we remained till the 8th of July, recuperating ourselves and animals, awaiting the arrival of Dr. Hoffman and party. This interval was devoted to investigations of a geographical, geological, and mineralogical nature. Astronomical and meteorological observations were also made. I visited the mines in the Silver Peak and Red Mountain mining districts, which are owned by the Silver Peak and Red Mountain Gold and Silver Mining Company, who have a 30-stamp gold-mill at this point. For the details regarding these mines I would respectfully invite your attention to my report on "Mines and mining districts," appended and marked A.

Clayton Valley is a complete interior basin, being surrounded on all

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sides by mountains. It is about eighteen or twenty miles long, and from eight to fifteen miles wide, the longer axis being nearly north and south. There is plenty of grass in the vicinity of the springs, but poor in quality, and no wood nearer than the summit of the main ridge, about ten miles from the mill.

Upon taking a cursory view of the topographical features of the country to the south and southeast from a peak near our camp, and foreseeing that the farther my line of topography extended in that direction, toward what was known as the "head of the Amargosa," the position of which point was very indefinite and mythical, the greater would be the probability of my forming a junction with your line, without serious difficulty on my outward march from Camp Independence to meet you subsequent to this time.

Dr. Hoffman and party having arrived on the 8th, the next day I ordered him with the same party to cross Clayton Valley in a southeasterly direction, cross the Montezuma Range into Alida Valley, moving south and southeasterly down that valley to Gold Mountain, visiting the mines there, and swing around the Palmetto Mountains to the westward, examining those mines, and thence to rejoin me in Fish Lake Valley.

I directed the chief topographer, Mr. Nell, to make a very careful survey of the country thus traversed, to fix as many points as possible to the south and southeast of Gold Mountain, and to collect every item of topographical and geographical information he could obtain in regard to that *terra incognita*. This he did with great ability and judgment, and to my entire satisfaction. The knowledge thus obtained was afterward of the greatest service.

On the 10th we crossed the Red Mountain Range to the north of Red Mountain and Silver Peak, the two most noted peaks of this range, and camped at Red Mountain Spring, near the foot of the former peak, on the western slope, having made a short march of eleven and three-fourth miles. From this point myself and a small party made the ascent of those peaks and took barometrical observations. The assistant topographer, Mr. Klett, also took advantage of this to gain an extended view of the country.

The next day the party moved to near Fish Lake, a small body of tepid water, a few rods in extent, in Fish Lake Valley, a distance of nineteen miles.

There is pretty good grazing in the Red Mountain Range, and plenty of timber for fuel on the mountain ridge and western foot-hills. Abundance of excellent water is found at three points on the western slope, at Red Mountain, Mamie, and Cave Springs. It is said that Mamie Spring has only been running about two years.

Red Mountain is of volcanic origin, as is also Silver Peak. These two peaks are about three miles apart and joined by a sharp, comb-like ridge. The western foot-hills are of sedimentary origin.

From Fish Lake Valley to Camp Independence there is nothing new of topographical importance, as our route lay sensibly along an area surveyed by Professor Whitney in his able geological survey of the State of California.

At Fish Lake Dr. Hoffman and party joined, returning from Gold Mountain. His report is appended, marked C, and he was immediately detached to make a side trip to the northward via Columbus, thence, crossing the White Mountains to McBride's ranch, he was to follow down Owen's River and valley to the rendezvous camp at Camp Independence examining the mines and mining districts on his route. His report of this trip is appended hereto, marked D.

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There are several ranches in Fish Lake Valley; hay, barley, oats, and potatoes being produced in abundance. Irrigation is necessary. Near the south end of the valley is Piper's ranch, the most important one, perhaps, in the valley, several hundred acres being under cultivation, and irrigated by the waters of Cottonwood Creek. Quite a large area could be rendered productive by a judicious use of the water from small creeks issuing from the White Mountains, which are soon lost in the sand. A good wagon-road connects Piper's ranch with Palmetto, and another with Deep Spring Valley.

From Fish Lake we marched to Piper's ranch, twenty-two miles, thence crossing a low range through a good pass, and passed down the eastern side of Deep Spring Valley, a small interior basin about ten miles long by four or five miles wide, inclosed by two spurs of the White Mountains, which fork at the upper end of the valley and join again at the lower end, producing this unique basin. Three small lakes, a salt marsh, and several springs, some of the latter being sulphur springs, are situated at the southern extremity of the valley.

Wyoming Creek rises in the mountains to the northwest and running southeast for four or five miles sinks in the sand. Plenty of water and good grass at lower extremity of this valley, but no wood. The remainder of the valley is covered with sage-brush, growing in a deep, sandy soil.

From Deep Spring we crossed the White Mountains into Owen's River Valley through a very good natural pass, but which, at two points, is impracticable for wagons. A wagon-road is being constructed from Owen's River up the western slope, which will descend into Deep Spring Valley by a cañon to the north of the one by which we ascended. Plenty of wood for fuel on and near the summit. Distance to Owen's River about twenty-two miles.

We crossed the river at a ford above and near Big Pine Creek, which is a very good one when the river is not too high. There are several ranches here on Big Pine Creek, but a great deal more land could be irrigated and reclaimed, as the supply of water in this creek is exceedingly abundant and excellent, and has a good deal of fall.

At this point I left my train to follow me on next day, and pushed forward to Camp Independence, about twenty-eight miles distant, where it also arrived the 18th, at 10.30 a. m. Here I immediately established an astronomical and meteorological station, and placed Mr. Austin, the astronomer, in charge. Mr. A. R. Marvine reporting here to me, was assigned as assistant to Mr. Austin, as previously directed by you.

FROM CAMP INDEPENDENCE TO GOLD MOUNTAIN AND RETURN.

Immediately upon my arrival at Camp Independence I fitted out a small party of picked men and carefully selected animals, to run a reconnaissance line to what was known as the head of the Amargosa. The object of this line was to determine whether or not a passage could be found directly to the eastward over the sterile deserts and mountains intervening between the Amargosa and Owen's Rivers that was practicable for a large train of men and animals; to procure data for constructing an accurate topographical map of that unknown area; to make collections in natural history, mineralogy, and geology; and, lastly, to form a junction, if possible, with your line, and, if a practicable route was discovered, to lead your large train to our rendezvous camp in Owen's River Valley. This party consisted of one topographer, two civilian assistants, two soldiers, a guide, a packer, an Indian, and myself, with four pack-mules.

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Before starting I could get no definite information concerning the country to be traversed, and from every quarter received the most discouraging accounts of the dangers attending such a trip through a country entirely destitute of water, as far as known, after crossing the Inyo Range. Not deterred by these unfavorable reports, I was enabled to take the field again within three days after my arrival, with my animals re-shod, and the party supplied with forage and rations.

I would here state that I am deeply indebted to Major H. C. Egbert, captain Twelfth Infantry, commanding post of Camp Independence, and to Lieutenant W. E. Dove, Twelfth Infantry, acting assistant quartermaster at that post, for their prompt and energetic co-operation, by placing all the resources of the post at my disposal, and lending me their earnest assistance.

About noon, July 21, we left camp, and passing through the town of Independence, crossed Owen's River at Bend City, (now deserted,) and ascended the mountains through Mazourka Cañon. Fifteen miles up we camped at an excellent spring; grass and wood plenty. Next day crossed the range and camped in a deep, rugged cañon filled with blocks of granite, and very narrow, which we called Wheeler's Cañon. Here there was plenty of wood and water, but very little grass. Below us, and to the southward, lay Salinas Valley, a small interior basin, about twelve miles long, and from five to eight miles wide, containing salt-beds near its southern extremity. Mr. Hahn, the guide, now requested us to remain in camp one day while he would go in advance and see if there was enough water for the party at Grape-Vine Spring, which, he said, was about thirty-five or, perhaps, forty miles distant. He said he knew the route, and was positive we could reach that point in one day's march; but when questioned in regard to the locality of the pass in the opposite range, he gave evasive answers, nor could he give any definite information in regard to the character of the country to be traversed.

From several previous interviews I had held with him in regard to this country, I had grave doubts as to whether he knew the country or not; these doubts were now painfully confirmed. Mr. Hahn asserted positively that he could go to Grape-Vine and return the same night by 10 p. m. I concluded to remain in camp one day and let him go in advance, directing him to be back by 2 a. m. the morning following, but that I should start on his trail at 5 a. m. whether he returned or not. I ordered Kœhler and the Indian, "Sam," to go with him to Grape-Vine Spring and remain there, making collections in natural history till I came up.

July 24, at 5 a. m., Hahn not returning, I set out upon his trail to the northeast, hoping to meet him. This trail led over a rocky, volcanic divide, separating Salinas from Termination Valley, which latter was some fifteen or twenty miles long, having heavy sand-hills, over which the trail led, the mules sinking knee-deep at every step. The day was excessively hot. The wind, passing over the heated sand-hills, came in scorching gusts, rendering our sufferings intense and our thirst almost intolerable, while the incessant glare of the sun upon the white sand nearly blinded us and caused great pain in our eyes and heads after the first few hours. At 4 p. m. we struck the slope leading up to the foot-hills, covered with sharp rocks and jasper flints. By 5 p. m. we were brought to a half way up a sharp peak, over which the trail led, by the mules becoming so weak as to be unable to proceed farther. I ascended the peak alone on foot to get a view of the country beyond. Once up, I saw no hope of getting my animals, in their then weak and exhausted state, over the summit at this point, so steep and rocky were

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the mountains. Beyond, range after range of black ridges, their wall-like sides banded with white, red, and yellow strata, reared their frowning crests, and seemed to interpose an impassable barrier to farther progress. I returned to my anxious followers and we descended in silence and tried two or three cañons, but, after penetrating a short distance in each, were compelled to turn back by vertical walls of rock that effectually prevented our ascent. Worn out and almost exhausted, we bivouacked on the heated, flinty surface to get a little rest; made some coffee, our only fuel being some small bushes, and ate a little hard-tack. We dared not eat any meat for fear of increasing our thirst. I was surprised at the rapidity with which the mules weakened and succumbed to fatigue upon this day's march. We saw nothing of Hahn, and I concluded that he had found the country worse than he anticipated, and had, no doubt, deserted us; or, thinking, perhaps, we would not attempt to follow his trail with pack-mules over such a country, had gone on to join you. Twenty-four miles were made this day. Most of the distance we had to march on foot, owing to the weakness of our animals. The soles of my shoes had completely worn out, and the others were but little better off. Fortunately, I had a pair of slippers with me, which protected my already bleeding and lacerated feet a little at least.

Next morning I started off to southward along the foot-hills, to make one last endeavor to find a pass through which I could penetrate this range into the valley I knew must lie beyond. Happily I found a cañon which bade fair to lead us to the summit without serious obstacle. This we called Last Hope Cañon. We reached the summit without difficulty, and here found the trails of the three animals ridden by Koehler, Hahn, and the Indian. It was at or near this point that Koehler afterward told me he had last seen Hahn about 8 p. m., at which time Hahn turned and left him without saying a word, and that he called to him but received no answer, and supposed he had gone back to meet me. Hahn must have followed after Koehler and the Indian that night, for we found the three trails lower down and near the mouth of the cañon. This trail we followed eagerly down a deep cañon, but scarcely had we proceeded half a mile ere we came upon one of those falls of tilted slate which so often impede or prevent one's progress in these cañons. With considerable loss of time we succeeded in reaching the arroyo below by climbing a bluff and going down a steep incline of loose rocks and soil, but hardly half a mile more had been traversed before we came upon another fall, about 30 feet high. This barrier appeared at first sight to be impossible to surmount with our loaded pack-mules, but to return was hopeless, for the mules were too weak to climb back around the first fall. Our situation was indeed critical. Here we drank the last drop of water that we had husbanded carefully, amounting to only a few swallows each. This appeared rather to increase than alleviate our burning thirst. The party looked at me in silence till I gave the order for unpacking and lowering the cargoes with lash-ropes over the precipice. This was done cheerfully and without a murmur. With much labor, patience, and coaxing we got the mules to clamber up the cliffs and slide down into the wash below, without the loss of a single animal.

I cannot speak in too high terms of the admirable courage and cheerful obedience of my little party during this trying day. Feeling little hope of meeting with water, we moved silently down for several miles, when suddenly a cry of "water" was heard from the man in front, who pointed to a small green patch on the mountain-slope to the northwest.

At the mouth of this cañon—called Break Neck Cañon by the men—

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we left the trail of the men who had preceded us, they having turned off to the right, and made for the green spot over a perfect net-work of rocky ravines. The surface was completely covered with broken volcanic rocks about the size of ordinary cobble-stones. About sundown we reached it, and found water sufficient for our wants by digging. Our joy at this discovery knew no bounds. This we christened "Last Chance Spring." Distance made from last camp, nineteen miles.

The next day, feeling very foot-sore and weak, though much refreshed, we started across the upper end of Death Valley, traveling over a gravelly, sandy desert to Gold Mountain, twenty-two and a half miles distant, reaching there about 4 p. m. About the middle of the valley we crossed a mule-track leading north toward Tule Cañon; this we thought to be the track of Hahn's mule.

At Gold Mountain, finding two miners, I learned from them that I could not reach the Amargosa in less than three days' march, owing to the worn-out and lame condition of my animals. This would render me too late to meet you at that point according to our preconcerted arrangement. I prevailed upon Mr. T. J. Shaw, one of the miners, to take a fresh mule of his own and carry a message to you the next night. He did so, and returned the night following, bringing back your answer, which informed me of the critical condition of your party in regard to provisions, and also of the non-arrival of Hahn, the guide.

This latter advice led me to suppose that he had deserted us to our fate, and made for Tule Cañon, where there was water. I immediately sent Mr. Shaw back to Grape-Vine to guide your train to Pigeon Spring, via Death Valley and Tule Cañon, while, with my party, I started for Fish Lake Valley to get supplies, and returned to Pigeon Spring, which we accomplished by 6 a. m. on the morning of the 28th, having been twenty hours in the saddle. That same day I went to the head of Death Valley to meet the train, but failing to make it out on the desert, returned, and had just laid down to obtain a little rest when Mr. Shaw arrived with a note from Dr. Cochrane, who was in charge, saying that they had arrived in a very exhausted condition at Tule Spring, some eight or nine miles distant. I immediately saddled up, and taking some flour and barley set out for that point, reaching there at 2.30 a. m.

The next day I moved your train over the mountains to Pigeon Spring, where, killing a beef, and having plenty of wood, grass, and water, we enjoyed a good night's rest and the first hearty meal either party had had for several days. Thence, by easy marches, via Piper's ranch and Deep Spring Valley, I reached the rendezvous camp.

FROM CAMP INDEPENDENCE TO COTTONWOOD SPRINGS, NEVADA.

During the time that we lay in Independence I was engaged in fitting out and supplying the different parties with subsistence stores, preparatory to another forward movement, and in duties of a general executive nature.

August 12, main party No. 1 left this camp and moved south through Independence and Lone Pine, crossing Owen's River and camping near its mouth after a march of twenty miles. At this point you left us, and passing via Cerro Gordo were going to run a reconnaissance line to the north of mine, and then join me in the Telescope Range.

Our next march was to the east of Owen's Lake, some twelve miles, to a point below Swansea; road very sandy; short alkali grass, very poor in quality; bad water, and no wood. We then moved southeast to near Arab Springs, in the Coso Range, about sixteen miles. Here we

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had plenty of wood and grass, but very little water, though plenty of water was found at a large spring, five miles distant, in east side of range. The next day we crossed a small, broken, desert valley, called Tortoise Valley, and camped twenty-five miles out, near Egan's Falls, in Darwin Cañon; little wood, plenty of water, but no grass here. The spring here suddenly rises near the foot of a high bluff, and quite a little stream issues forth; running a short distance, it is precipitated over several cascades, from 12 to 80 feet high, formed by slate ledges. The cañon at this point, and for some distance below, was impracticable, being only a narrow gorge cut through the slate by the water. The formation of this range is chiefly granite, slate, and volcanic rocks, with large mineral deposits in Granite Mountains. From here we crossed a high mountain by a steep trail, and, passing to the north and west of Granite Mountain, we regained Darwin Cañon, and following it down we debouched from the Tortoise Range into Panamint Desert, a sterile basin, utterly destitute of vegetation except a few thorny shrubs. This desert for some miles was sandy. Then crossing a large alkali flat, till near the eastern side, our route lay over low volcanic mesas whose surfaces were torn up and washed into deep, rocky ravines by the terrific water-spouts which are of frequent occurrence in this section. The trail now was extremely rough and rocky, rendering traveling very difficult; reaching the foot-hills we suddenly changed our direction from southeast to northeast, and proceeded up Rose Cañon seven or eight miles to Rose Springs, about five miles northwest of Telescope Peak, on the western slope of Telescope Range, where we camped. The weather was extremely hot, men and animals suffering greatly from thirst and fatigue.

Panamint Desert is between twenty and thirty miles in length, and from eight to eighteen miles wide, a desolate waste of sand, gravel, alkali flats, and low mesas, with shifting sand-hills near northern extremity. Horned rattlesnakes met with here. Telescope Range, to the eastward from where we entered the desert, presented that peculiar banded structure of bright colors, known among old prospectors as "calico ranges."

Town's Pass lay to the north of our camp. At Rose Spring we had plenty of water, and near the head of the cañon, which was an open plateau, plenty of grass and wood. Here we lay for a few days to send a topographical party to the top of Telescope Peak, and pursuant to your verbal instructions I dispatched Mr. Charles King to Furnace Creek, on the east side of Death Valley, to seek a pass over the range and across that valley, and also to ascertain the amount of water there. This he succeeded in doing with great judgment. I also dispatched Mr. Egan, the guide, who so kindly volunteered to lead us to this point, with two men to go to Cottonwood Cañon, some distance up the range, there to meet and conduct you to my camp.

On the morning of August 19 he left them and went on ahead to the northward, up the west side of Death Valley, to find that cañon, and, having an excellent mule, was soon out of sight. They followed his trail till 11 a. m., and found their mules failing so fast that they turned back to Marble Spring, a place they had passed the day before. After much suffering and fatigue they regained my camp. As Mr. Egan had appeared quite positive in his knowledge of the location of the point designated to meet you, I had not the slightest doubt but that he had reached the camp of the small party at that place; but to guard against any chances of his failure to reach that point, and in case he should return to Marble Spring, I sent a man to the latter place with a note, advising him of our movement (should he not find the broad trail of the

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main party) across Death Valley, and also sent rations to be left there for him.

Upon this day you rejoined me and assumed command of the party. As Mr. Egan could not have reached Cottonwood before you left, we concluded that he had joined them afterward. I had no apprehensions for his safety, because he seemed perfectly conversant with the country. However, rations and a note were left for him at Rose Spring in case he *should* return to that place. Several days after, when the side party from Cottonwoods joined us at Ash Meadows, I learned that Mr. Egan had never joined them, and was supposed to have lost himself in Death Valley. Intelligence has since been received that he was heard from in Clarke District, near the Colorado.

From Rose Spring to Ash Meadows, Nevada, my duties were chiefly of a military nature, having command of the escort, and in executive charge of the train under your immediate direction.

The route between these two points lay, the first day, along and over the Telescope Range to Death Valley Cañon; the next, Death Valley was crossed at a point where it was some fifteen or eighteen miles wide. This crossing was made safely, a small side party being detached to take meteorological observations at the lowest part or sink of the valley, about ten miles to the right, and southward. We camped at Furnace Creek on the east side of the valley. Wood scarce, grass poor in quality, being short, alkali grass, very enervating to animals; water plenty, coming from numerous warm springs.

Two days' hard marching brought our worn-out train to Ash Meadows, where we found plenty of excellent grass and water, the latter from warm springs. Very little wood here. To reach this point we had to cross the Funeral Mountains, a range quite high and steep, and the Amargosa Desert, through which, for miles, the dry bed of the river of that name meanders southward. At this point we lay for a few days while you pushed forward to the rendezvous camp and sent back forage, of which we stood in great need. I then moved southward and crossed a low range into another sandy and gravelly desert, (Pah-rimp Desert,) which extends south for miles, and skirts the Spring Mountain Range. This desert contains several beautiful little oases, the principal one being at Pah-rimp Springs, at which point are located quite a number of Pah-Ute Indians, very friendly and quite intelligent. These Indians raise corn, melons, and squashes. Great quantities of wild grapes were found around these springs. From here, another day's march brought us to Stump Spring, on the old California emigrant-road. This road we followed to the rendezvous camp at Cottonwood Springs, Nevada, crossing the Spring Mountain Range through an excellent pass near Mountain Spring, where we found plenty of wood, grass, and water.

At Cottonwood Springs we lay for several days, procuring supplies from Camp Mohave and Las Vegas. Here the river party was detached to make the ascent of the Colorado by boat, and Lieutenant Lockwood placed in command of the land parties.

FROM COTTONWOOD SPRINGS TO SAINT THOMAS, NEVADA.

On the 15th of September, Lieutenant Lockwood left this rendezvous camp for Las Vegas, twenty-two miles distant, and ordered me to follow with my party twenty-four hours later. At Las Vegas we lay a day or two, awaiting the arrival of our supplies from Camp Mohave.

On the 20th we started on the arduous march across the Vegas plains and mountains to the old California crossing of the Muddy, about forty-

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five miles distant. This march was made at night, Lieutenant Lockwood and party leading. I followed with main party No. 1 about an hour later. We arrived next morning at the crossing. The following day we moved down to Saint Thomas, near the confluence of the Muddy with the Virgin.

At this point I was detached with a small topographical party to visit Salt Mountain, five miles south of Saint Thomas, and thence to proceed eastward across the Virgin Range to seek a point convenient to the crossing, for a rendezvous camp. The pass through this range is a very good one, practicable for wagons, though near the summit heavy sand was met with. The Mormons had passed through it formerly with their light wagons.

Two days' march brought us to Pah-Koon Springs, situated in a deep wash, which lies west of what the Mormons call the Grand Wash. The tract of country lying between the Virgin Range and the Se-Vitch Mountains to the eastward, and extending from near Saint George, Utah, to the Colorado River, is a high volcanic mesa, cut by numerous cañons, very deep, but nearly all of which empty into the Grand Wash. Getting into these chasms once it is almost impossible to get out for miles, the walls being high bluffs and nearly vertical. These cañons, or arroyos, rise to the northward in large upland plateaus, densely covered with cedar, containing a good deal of grass, but very little water.

Pah-Koon Springs are nine in number, all warm, with beds of quicksand beneath. The Indians have small patches of ground here which they irrigate and cultivate during the seasons they have no pine-nuts.

From Pah-Koon Springs we marched northward for a day, a night, and portion of next day, up one of these deep cañons, till we reached the elevated plateau covered with cedar, grass, and Spanish bayonets, where we found a small spring affording only a few quarts of water; thence crossing the Virgin Range and following down Rattlesnake Cañon, we reached the Rio Virgin. A march of eighteen miles in the bed of the river brought us to Lieutenant Lockwood's camp.

The formation was generally sandstone, overlapped by basaltic lava. The plateaus have a red soil, due, principally, to the disintegration of the bright-red sandstone.

The Mormons have a large stock-range here, there being sufficient water during most seasons.

FROM SAINT GEORGE TO THE CROSSING OF THE COLORADO.

October 1, Lieutenant Lockwood, with Mr. Spencer, the guide, and two men, left our camp near Saint George, and started for the crossing at the mouth of the Big Cañon of the Colorado, to make preliminary preparations for crossing that river, and left me in command of both land parties, with orders to follow as rapidly as possible. This I did, reaching Pah-Koon Springs on the evening of the 3d. It was intended to send a small topographical party down the Grand Wash, with orders to cross over and join me at Pah-Koon Springs, but, upon reflection, I concluded I could find a shorter, and perhaps better route, by going down the Grand Wash with the main parties, and crossing the mesa to the eastward of my former line. The only difficulty I apprehended was in not being able to descend the abrupt bluffs from the mesa into Pah-Koon Wash.

The Mormons penetrated down the Grand Wash to the Colorado, with wagons, some years ago. We found no obstacle that could not easily be overcome, and after following the Grand Wash for about

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twelve miles, rose up on the mesa and had an excellent road across it, which commanded a view to and beyond the Colorado. We had to enter this wash again lower down, following which for a few miles we crossed the mesa to the southwest, and found no difficulty in getting off it and reaching Pah-Koon Springs. At this point we found orders left by Lieutenant Lockwood to lie over one day.

Plenty of water, little grass, and no wood except mesquite, here. The next night I received an order from you, stating that you had completed the junction with your river party, and ordering me to push forward as rapidly as possible the next day, and try to arrive there in time to cross Lieutenant Lockwood's train the same day.

A trail led from Pah-Koon Springs to the old Ute crossing, about twenty-eight miles in length, passing water twice on the route; but learning that a very steep bluff had to be ascended from the Grand Wash, where we would have to unpack and take up half-loads at a time, which would cause great delay, I attempted to get on the mesa higher up the wash, and succeeded without difficulty. The route I took was much shorter, but very heavy and sandy in places, with several steep inclines, as my trail led over a succession of washes and ravines, running southwesterly into the Grand Wash. Striking the head of a cañon which led almost direct to the crossing, we arrived there before sundown, and before 9 p. m. had everything crossed by the boats except the mules, which were swum over next morning. Lieutenant Lockwood superintended the crossing in person.

The distance from this point to Truxton Springs was traversed in four days, both main land parties moving together, with Lieutenant Lockwood in command. Arriving here, we found that our supplies had not reached this point from Camp Mohave. Lieutenant Lockwood immediately dispatched two Army wagons, belonging to the new escort, a detachment of Troop C, Third Cavalry, which we found encamped here, for them. These supplies came promptly to hand, thanks to the energy of Lieutenant C. P. Eagan, Twelfth Infantry, assistant commissary of subsistence at that post. I was sent with three men to Camp Hualapais, about eighty miles distant, for the mail and some additional supplies.

FROM TRUXTON SPRINGS TO PRESCOTT, VIA CAMP DATE CREEK AND BRADSHAW MOUNTAINS.

October 26 I was detached, with a small topographical party and a picked escort of fifteen men, to move in a southeasterly direction to Camp Date Creek, thence to go to Bradshaw Mountains, visiting the mining districts there, and move northward to Prescott, Arizona Territory. A few miles north of Truxton Springs I gained the mesa which is a continuation of the grand Colorado plateau, and made old Camp Willow Grove that night. The country from this point was almost entirely unknown; our guide, Mr. Spencer, had been down to the Santa Maria once before, but we did not follow the trail he had before traveled, though we crossed it several times.

The stretch of country lying between the Aquarius Mountains on the west, and the Juniper Mountains on the east is, after the first twelve or fifteen miles south of Willow Grove, which is very rough and broken, a high, rolling, grassy mesa, abounding in antelope and deer; having plenty of excellent water in the creeks which lie at the bottoms of deep ravines, called in that country "box cañons," from their walls being so abrupt. These cañons are from 100 to 1,200 feet deep, with walls of volcanic rock, almost vertical, and after once reaching their beds it is

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an impossibility to get out except at a very few points; this is especially the case toward the lower ends. The creeks abound in excellent trout.

Trout Creek is the principal tributary of the Big Sandy, rising near Aztec Pass, in the Juniper Mountains; flowing southwest, it drains a large scope of country south of Willow Grove and enters the Big Sandy, after passing a narrow, rocky gorge cut through the Aquarius Mountains.

To the south of Trout Creek is a low, rolling divide, or water-shed, separating the waters of Big Sandy from those of the Santa Maria.

We crossed a number of these box cañons in succession, near their heads, the only place we could cross them. Through the principal ones flowed Ah-ha-pook, Spencer's, Sycamore, and Yavapais Creeks, all tributaries of the Santa Maria. Through this section we found small bands of Apache-Mohave Indians, and at Yavapais Creek quite a large band, well armed with rifles and well supplied with food. The head chief appeared quite friendly, but the young bucks looked upon us with no favorable eye. We had no trouble with them, however, and the next day crossed the sandy bed of the Santa Maria River, near the junction of its three forks, all of which were dry, except in one a stagnant pool was found, in which tules were growing. We then crossed a high granite range to the southeast, called the Santa Maria Range, into Date Creek Valley. This valley has a light, sandy soil, and contains considerable grass. The military post of Camp Date Creek is situated on a low mesa, south of the creek. All the officers of the post generously extended to us their assistance, and the hospitalities of the camp. To the eastward lies Antelope Valley, a nearly circular basin of high altitude, from which it is divided by a range of mountains, principally granite. To the north and northeast lie Thompson, Skull and Kirkland Valleys.

From Date Creek we crossed the range to the east, and camped one day in Antelope Valley. From this point I sent my pack-train to Prescott, under the command of Sergeant T. J. Moore, Troop C, Third United States Cavalry, and next day crossed a low, rocky range to the eastward, covered with dense *chaparral*, and entered Walnut Grove, a settlement on Hassyampa Creek, where we found cultivated farms.

Following down this valley, along a wagon-road, by a circuitous route we reached Minnehaha Flat, a densely-timbered plateau on the west slope of the Bradshaw Mountains. The next morning we reached Bradshaw City, about five miles farther east, by a steep mountain trail.

This mining camp has an altitude of about 7,000 feet. After visiting the mines we proceeded north along this range, passing through the Tiger, Pine Grove, Bradshaw, and Turkey Creek mining districts. The Bradshaw Range is densely timbered with excellent pine. Mineral deposits are found all along this range, but have not been developed. Plenty of water was found at Date Creek, in Antelope Valley, Walnut Grove, but very little in the Bradshaw Mountains or Turkey Creek.

FROM PRESCOTT, ARIZONA TERRITORY, TO TUCSON, ARIZONA TERRITORY, VIA CAMP APACHE.

Leaving Prescott, Arizona Territory, main party No. 1, commanded by yourself, proceeded to Camp Apache, via San Francisco Mountains, and through the Great Tonto Basin, arriving there November 25. We delayed at this point one day to obtain supplies, and from there proceeded by rapid, forced marches, to Camp Grant and Tucson, at which latter place the expedition was disbanded and the field operations ceased.

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My duties during this trip were principally of a military character, being in command of the escort and in executive charge of the party. I also had charge of the meteorological observations, and assisted in the astronomical work.

RECAPITULATION.

The length of the reconnaissance line surveyed under my immediate direction is nine hundred and eighteen miles, embracing an area of 11,750 square miles; this is independent of the line and area included in the trip from Owen's Lake to the west side of Death Valley, and from Ash Meadows to Cottonwood, Nevada. These lines were carefully measured with Cassella's field transits; all important points on both sides being established by triangulation. The base-lines used were the odometer measurements between the topographical stations, carefully reduced. Astronomical observations were taken at as many camps as practicable, to serve as checks for connecting the transit work. The distances from Belmont to Camp Independence, on both the main and side lines, were carefully measured with odometers, as also were those from Saint Thomas to Salt Mountain and return, from Saint Thomas to Saint George, Utah, and thence to the crossing of the Colorado.

The distances from Truxton Springs to Prescott, Arizona Territory, via Camp Date Creek and Bradshaw Mountains, were estimated.

Meteorological observations were taken at every camp, and hourly stations established at all rendezvous camps. Observations with aneroid barometers were taken at every topographical station and camp, and carefully compared, daily, with cistern barometers, thereby furnishing data for determining a profile of the route traversed.

VALLEYS.

The valleys passed through were twenty-three in number, mostly north and south, viz: Monitor, Ralston, Big Smoky, Clayton, Fish Lake, Deep Spring, Alida, Palmetto, Owen's River, Salinas, Termination, Death, Tortoise, Panamint, Amargosa, Pah-rimp, the Grand Wash and tributaries, Trout Creek Basin, Santa Maria Basin, Date Creek, Antelope, Walnut Grove, and Turkey Creek.

MOUNTAINS.

The principal ranges were the Toquima, Toyabe, San Antonio, Lone Mountain, Red Mountain, Montezuma, Palmetto, Green Mountain, Gold Mountain, White Mountain, Inyo, Telescope, Coso, Tortoise, Funeral, Spring Mountain, Virgin, Juniper, Aquarius, Santa Maria, Antelope, and Bradshaw.

INDIANS.

The various tribes encountered were the Shoshones, Pah-Utes, Owen's River Indians, Se-Vitch, See-Vints, Hualapais, and Yavapais, or Apache-Mohaves.

The Shoshones were scattered sparsely from Belmont to Fish Lake Valley, in the Toyabe, Red, and Montezuma Mountains. A small band was seen east of Palmetto, about Tule Springs.

The Pah-Utes were found at Piper's ranch, in the White Mountains and Deep Spring Valley, and afterward in considerable numbers around Pah-rimp Springs, Cottonwoods, and Las Vegas, Nevada.

The Owen's River Indians are scattered along that valley, but of their numbers I could get no definite idea. They are not very numerous.

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The Se-Vitches are few in number and live in the mountains adjacent to the Grand Wash and its tributaries. They have little communication with the whites.

The Hualapais, formerly a numerous and warlike tribe, are now much reduced in numbers, and are at peace with the whites. They are found in the Hualapais and Aquarius Mountains, and around Truxton, Beale's and Peacock's Springs, and on the Big Sandy.

The Yavapais, or Apache-Mohaves, are quite numerous, and range over a great extent of country, from Willow Grove and Aztec Pass, south to Fort Yuma and below Wickenburgh; from Bill Williams' Fork east to the Tonto Basin. They are broken into many small bands. I only saw about five hundred or six hundred of them. At Ash Meadows is a small band of about fifty men, women, and children, composed of renegade Shoshones and Pah-Utes, together with a mixture of these two tribes.

Most of these Indians lead a precarious life, subsisting upon pine-nuts, the fruit of the piñon pine, the seeds of weeds and grasses which they carefully collect, jack-rabbits, lizards, small birds, and the few deer they are able to find occasionally in the mountains.

The Pah-Utes in Pah-rimp Valley, and around Cottonwoods and Las Vegas, raise, in addition, corn, melons, squashes, and gather large quantities of wild grapes, which grow abundantly near the springs. They are quite intelligent, and were very friendly. Virtue is almost unknown among them, and syphilitic diseases very common.

The Apache-Mohaves were by far the most superior Indians met with, being well armed, well equipped with food and clothing and blankets. Their country abounds in deer and antelope, and in all their wigwams were found large stores of dried venison, grass-seed, from which they make a kind of bread, and dried "tunas," as they call the prickly pear that grows in great abundance in their country. The muscular development of these Indians, and especially of their lower extremities, is truly wonderful. The women are often beautiful, and, as a class, are strictly chaste and virtuous, any deviation from the path of rectitude being visited by the summary punishment of cutting off the nose, from their jealous lords and masters.

AGRICULTURAL LANDS

are few and limited in extent, the greater part of the area surveyed being characterized by almost perfect sterility. The tillable oases are found in Fish Lake, Deep Spring, Owen's River, at Ash Meadows in Amargosa Desert, Pah-rimp, Date Creek, Antelope, and Walnut Grove Valleys.

GRAZING LANDS.

Stock-ranges, like agricultural lands, are far from being numerous and extensive. A limited amount of grass was found in the Red Mountains. The White Mountains are said to possess a tolerable range. Other grazing lands were found at Palmetto, Deep Springs, along Owen's River, at Ash Meadows, head of the Grand Wash, around Tin-na-kah, and Truxton Springs, and on the mesa between the Aquarius and Juniper Mountains.

At Palmetto, near Pigeon Spring, there are over 5,000 acres of very good grazing lands, with plenty of water.

The finest stock-range and grass-lands met with on my lines were those upon the high, rolling mesa south of Willow Grove, inhabited by the Apache-Mohaves, which embrace thousands of acres, with plenty of clear running water in the creeks that flow through the "box cañons."

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MINING DISTRICTS.

Twenty-four mining districts lay upon the lines traversed by the parties under my direction, viz: San Antonio, Montezuma, Palmetto, Alida, Gold Mountain, Green Mountain, Columbus, Oneata, Blind Spring, Montgomery, Silver Peak, Red Mountain, Deep Spring Valley, Fish Spring, Granite Mountain, Tiger, Pine Grove, Bradshaw, Turkey Creek, Weaver, Walnut Grove, Hassyampa, Martinez, and Santa Maria districts. For notices of these, your attention is respectfully invited to my report on "Mines and Mining Districts," appended and marked A, and to Dr. W. J. Hoffman's reports, marked, respectively, B, C, and D.

MEANS OF COMMUNICATION.

On the completion of the road over the White Mountains to Deep Spring Valley, a very fair wagon-road will exist from Belmont to Owen's River, California. From Gold Mountain, Fish Lake Valley is reached by a tolerable trail to Palmetto, and from there to Piper's ranch by wagon-road. A good road could be constructed the entire distance without great difficulty.

Silver Peak is connected with Montezuma, San Antonio, and Fish Lake Valley by wagon-roads, and by the latter road, via Columbus, with Wadsworth, on the Central Pacific Railroad. From Columbus a road leads over the White Mountains to Owen's River; thence down that valley to Independence and Lone Pine. A wagon-road can be constructed from Montezuma to Gold Mountain, via Alida Valley. That a road can be constructed from Saint George, Utah, down through the Grand Wash and its tributaries, via Pah-Koon Springs, crossing the Colorado at or near the "old Ute crossing," and thence via Tin-na-kah and Truxton Springs to Camp Hualapai and Prescott, Arizona Territory, there can be no doubt; for a discussion of the practicability of the route, I would respectfully invite attention to Lieutenant Lockwood's report.

REMARKS.

This report is necessarily chiefly narrative in its nature, and is, perhaps, not so concise and positive as it might be, owing to the fact that a great many of the field-notes shipped have not arrived, being blockaded and delayed while *en route* by the severe snow-storms on the Union Pacific Railroad. In it I have only presented information in regard to the area explored and surveyed entirely under my direction, leaving those portions upon which I only *assisted* to be treated of by yourself and Lieutenant Lockwood.

Every effort was made to make the collections in natural history, mineralogy, and geology as full and comprehensive as possible.

The greatest care was taken to render the geographical and topographical notes full, clear, and explicit, in order that the final map would present all the essential details of the physical conformation of the area explored.

It was found that the general trend of the mountain ranges encountered was northwest and southeast, separated by elongated valleys, which are often broken into two or more parts or lesser valleys, by lateral spurs diverging from the main ranges. These valleys are nearly all arid deserts, small interior basins with no surface outlet for their waters, resembling often the dry beds of lakes, and are component parts of the great interior basin.

The water-sheds of these basins, the constitution of their soils, their geological and physical characteristics, the distribution of vegetation

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and water, together with their properties and amount, have been carefully noted, and will appear in a general report intended to embrace all the detailed information upon these various subjects.

Too much praise and commendation cannot be bestowed upon the detachment of Troop I, Third United States Cavalry, who acted as escort to the expedition during the entire term of field operations.

I would here thank all the members of the expedition under my charge, for the able and efficient manner in which they performed their various duties, and the earnest interest manifested by them in the success of the expedition.

Respectfully submitted.

D. A. LYLE,
Second Lieutenant, Second United States Artillery.

Lieutenant GEORGE M. WHEELER,
United States Engineers, in charge of Explorations in Nevada and Arizona, Washington, D. C.

APPENDIX C.

Report of Edward P. Austin, astronomical assistant.

ENGINEER OFFICE,
(EXPLORATIONS IN NEVADA AND ARIZONA,)
Washington, D. C., March 2, 1872.

SIR: I have the honor to submit the following preliminary report upon the astronomical operations for the determination of latitudes and longitudes, under my charge, during the season of 1871.

The stations occupied were Carlin, Nevada, and Battle Mountain, Nevada, on the Central Pacific Railroad, Austin, Nevada, Camp Independence, California, and Salt Lake, Utah.

The instruments employed were a sidereal chronometer by Negus, No. 1344; a mean solar chronometer by Hutton, No. 288; and a portable transit of 26-inch focus, and 1¾-inch aperture, by Würdemann, No. 16, which had been altered to convert it into a meridian instrument, similar to those introduced by the United States Coast Survey.

CARLIN, NEVADA.

Observations at Carlin consist in observations for time and exchanges of telegraphic signals for difference of longitude, with Washington, D. C., (United States Naval Observatory, J. R. Eastman, observer,) through Detroit, Michigan, (United States Lake Survey Observatory, O. B. Wheeler, observer,) on May 19, 23, and 24; and observations for latitude May 17, 25, 26, and 27.

BATTLE MOUNTAIN, NEVADA.

The observations at Battle Mountain include observations for time and exchanges of signals with Detroit, Michigan, June 1, 3, and 10; and observations for latitude, June 6, 7, 8, and 9.

AUSTIN, NEVADA.

At Austin, observations for time and exchanges of signals were made with Detroit and Washington, June 16, and with Detroit June 26, and 29.

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Observations for latitude were made at this place June 15, 17, 21, and 23.

CAMP INDEPENDENCE, CALIFORNIA.

At this place I was assisted by Mr. A. R. Marvine. The observations at this point consisted in observations for time, moon culminations for longitude, observations to determine the constants of the instrument, and observations for latitude. They lasted from July 21 to August 7.

SALT LAKE CITY, UTAH.

I then repaired to Salt Lake City, Utah, to await the arrival of Mr. Marvine at Saint George, Utah, when observations were made for time, and signals exchanged between Salt Lake and Saint George, on September 13, 14 and 15.

During the interval between my arrival at Salt Lake and Mr. Marvine's arrival at Saint George, observations were made to determine the constants of the transit instrument.

The instruments used at Salt Lake were a mean-time chronometer, by Barrand, No. 22961; and a portable transit of 31 inches focal length, 2½-inch aperture, by William Würdemann, No. 19, which was firmly mounted on a sandstone pier, in the observatory erected in 1869 for the United States Coast Survey party; these instruments, and the observatory, being the property of Brigham Young, president of the Mormon church.

PROBABLE CHARACTER OF RESULTS.

From the preliminary reductions, the probable error of a time determination with the instrument used at the stations from Carlin to Independence is from $\pm 0.''02$ to $\pm 0.''04$, and the probable error of a single pair observed for latitude is $\pm 1.''37$, giving the probable error of a result depending on thirty pairs $\pm 0.''25$; on fifty pairs $\pm 0.''20$. These values will be considerably reduced by the final computations.

The time determinations at Salt Lake, owing to the larger size and greater stability of the instrument, as well as the more favorable conditions for observing, give a probable error much less, being less than $\pm 0.''01$.

Considering the character of the instruments, the means of recording, and the limited time allowed for the observations, the probabilities are that the results will prove highly satisfactory.

Very respectfully, yours,

E. P. AUSTIN,
Astronomical Observer.

Lieutenant GEORGE M. WHEELER,
United States Engineers, in charge of explorations.

APPENDIX D.

Report of G. K. Gilbert, geological assistant.

ENGINEER OFFICE,
(EXPLORATIONS IN NEVADA AND ARIZONA,)
Washington, D. C., March 9, 1872.

DEAR SIR: In addition to the results of my own work, which was performed throughout the entire season of field duty, geological data were collected for limited periods by several gentlemen of the scientific corps

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Mr. A. R. Marvine, serving in the double capacity of astronomer and geologist, was busied with geological examinations more especially during the latter half of the season, and will himself prepare the results of his labors for publication. Lieutenant D. A. Lyle, Dr. W. J. Hoffman, Mr. C. A. Ogden, and Mr. E. P. Austin have volunteered to contribute geological information in regard to some regions that I was unable to visit. Altogether the geological observations will be found to relate to about one-half of the lines of geographical exploration and survey. Keeping pace in our movements with rapidly executed geographical work, the geologists were unable to command the time necessary to the complete description of even the immediate line of travel, and the most we can claim to have accomplished is a reconnaissance of our field. Of this character essentially have been the labors of geologists attached to other exploring parties, and, indeed, the achievement of more thorough work in connection with exploration is neither possible nor, in every sense, desirable. I would not, of course, be understood that it will be unprofitable to make a careful and detailed survey of the geological structure and mineral resources of our whole territory, but that the first efficient step toward its accomplishment must be a cursory reconnaissance—a preliminary survey—with a view to obtain, at the earliest possible date, the broadest generalizations, the simplest and most comprehensive ideas in regard to the sequence and distribution of the rocks, to serve as a frame-work in which every later study of a locality or district may find its appropriate place. More than this, these primary generalizations, crude though they are, and subject to indefinite future modification, answer in the best feasible manner the most pressing demands of a region that must depend for its development on the understanding and appreciation of its mineral resources. The limits within which the discovery of the several precious and useful minerals may be anticipated, and beyond which they need not be sought, are indicated by the first and most comprehensive lines the geologist draws on his map; for they chiefly depend on broad distinctions that cannot fail to be made on the first examination.

Our field of operations has afforded us a view within the space of a single season of an unusual variety of geological features distributed over an immense area. Our southward progress, amounting to nearly seven hundred miles in a right line, was accomplished by a zigzag course that showed us a belt of country averaging one hundred miles in width, and expanded in one part to two hundred and fifty miles. Of a great portion of this region no geological description whatever has been written, but at several points it has been intersected by the lines of earlier geological exploration, the majority of which have crossed the country in an east and west direction. It has been our province to establish the connection, and measurably to fill out the intervals between them. The relations which our investigations sustain to those of Dr. Newberry, Dr. Antisell, M. Marcou and others, in Arizona; of Professor Whitney, Professor Blake and others, in California, and of the geologists of the Fortieth Parallel Survey, enable us to have a far better understanding of the phenomena presented by our field than would be possible if our work stood alone, and enhance in more than one way the value of the contribution we are able to make to the geological history of the continent.

Our work was facilitated, in a measure that can hardly be appreciated by persons unfamiliar with deserts, by the absence of trees and absence of soil that characterize the greater part of Nevada and Arizona. Not merely were rock exposures everywhere provided without search, but the view was in all directions unimpeded, and we could frequently see

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the limits of the different rocks beautifully delineated on the slopes of the distant mountains, revealing at a glance relations that in a fertile country would appear only as the results of extended and laborious investigation. This advantage, which we shared with all our collaborators in the interior of the continent, enabled us to obtain from what was within our reach no inconsiderable knowledge of what was merely in sight, and thus expand into a belt what might otherwise be a mere line of observation.

In the arrangement of the geological material for the final report, two needs are to be considered. By the resident, and by the traveler or geologist who shall follow in our steps, local details and exact localities, will be demanded; while the general reader, scientific or lay, will care only for the deductions that are of broadest application and such facts as are most important in their relations to the study of the continent. For this reason the report will be divided into two principal parts, of which the first (Chapters I–VIII) will record all observations of a local character in geographical, or rather itinerary order; and the second (Chapters IX–XVII) will contain a systematic arrangement and discussion of the results of our work.

The following schedule will serve to indicate the scope of the report:

CHAPTER I. *Halleck Station to Ophir Cañon.*—A portion of our travel in this interval was upon the belt traversed by the Fortieth Parallel Survey, and the latter part lay along a portion of the Toyabe Range, already described in the first published volume of the report of that corps.

CHAPTER II. *Ophir Cañon to Pioche, and Silver Cañon to Big Pine.*—This route carried us eastward over a succession of meridional ranges, nine or ten in number, and then obliquely back to a point one hundred and fifty miles farther south. With (apparently) two exceptions, these ranges consist of highly-inclined, stratified rocks, more or less metamorphosed, associated with granite, and flanked—in places even covered—by volcanic materials.

CHAPTER III. *Big Pine, in Owen's Valley, to Camp Mohave.*—Owen's Lake is surrounded by a series of deserted beaches, marking epochs in the gradual desiccation of the Great Basin. On the uppermost are lacustrine shells (*Anodonta*) in abundance, showing that the lake when 50 feet deeper was of fresh water. I found them on none of the lower beaches, and the alkaline water of the present lake appears to support insect life only. Concordantly it appears that the lake had then an outlet, discharging its surplus water southward, over what is still the lowest point of the rim. We followed the bed of this ancient river for thirty-five miles, and passed in sight of the broad depression east of Walker's Pass, in which it terminated, and where it formed, doubtless, a lake as briny and desolate as the one that now accumulates the saline constituents of Owen's River. From Owen's Valley we once more crossed obliquely the system of mountain ranges.

CHAPTER IV. *Camp Mohave, via the Colorado River, to the mouth of Diamond Creek.*—The cañons of Colorado, cutting down almost to the ocean level, give natural cross-sections of several ranges, and afford an opportunity to study on a grand scale the dislocations that accompany the upheaval of mountains. The geological section of the river bank exhibits at the east the undisturbed strata of the Colorado plateau with a thickness of one mile; toward the west, the dislocated masses of the same strata, forming a series of ridges with their upturned edges; and still farther, the granite nuclei and flanking schists and lavas of Virgin and Black Ranges.

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CHAPTER V. *Diamond Creek to the Triplets, in San Carlos Valley*—Our course lay along the southern margin of the Colorado plateau, and in our repeated ascents and descents of its escarpment a number of sections were obtained, establishing the identity of the principal beds for a distance of three hundred miles.

CHAPTER VI. *Triplets to Tucson.*

CHAPTER VII. This and the following chapter will comprise the report of Mr. A. R. Marvine, who furnishes the following *résumé:*

"Chapter VII will contain some scattering observations between Independence, California, and Saint George, Utah, with a more continuous set of observations between the latter place and Camp Verde, Arizona Territory. From Saint George the course was south, the "Grand Wash," lying between the eastern, precipitous face of the Colorado plateau and the Virgin Mountains, being followed, and the Colorado River crossed. Here we ascended from the granite to the lower bench of the plateau, and, traveling south and east near the edge, descended again to the granite near Truxton Springs. Granite, with some metamorphic rocks, predominates from here to Verde, forming, near the latter, the Black Hills, and being covered in some localities by lava fields and one or two isolated remnants of the plateau. The "mineral" veins of this region occur in the granite and metamorphic formation.

"CHAPTER VIII. *From Camp Verde to Tucson.*—The valley of the Verde River, at the camp, indicates the line of demarkation between the granite of the Black Hills and the horizontal sedimentary strata of the Colorado plateau, which is here called the Black Mesa. We at once ascended and proceeded eastward to the Little Colorado, crossing the large basaltic mass which occupies the central area, rests upon the sedimentary rocks, and seems to have been continued somewhat farther north, in the vicinity of San Francisco Mountain. At the Little Colorado we turned south and east, crossed the Mogollon Mountains, and descended through the upper strata of the mesa to Camp Apache. The Mogollon, and probably the White Mountains farther east, are extended basaltic masses, resting on the mesa top in the same manner as San Francisco Mountain and adjacent lava masses. From Apache to Florence the course was southeast, passing through the lower sedimentary rocks of the mesa into the mountainous and diversified granitic region of Eastern Arizona, and out upon the deserts of the Gila River. Turning southeast, we remained on these to Tucson."

CHAPTER IX. *On the structure and age of the mountains of the Great Basin.*

CHAPTER X. *On the valleys of the Great Basin; their character dependent on origin, amount of filling, and present conditions.*—The great majority are troughs between upheaved meridional ranges, partly filled by *detritus* (of subaqueous and subaerial deposition) from the adjacent mountains, and modified by floods of lava, that in numerous instances have connected parallel ridges and thus divided, more or less perfectly, the intervening valleys. In some of the lower areas, to which, in the gradual emergence of the continent, the sea had longest access, the valleys have been so completely filled as to connect with each other and constitute plains, through which the peaks (or the remnants) of the intervening ranges jut as "lost mountains."

CHAPTER XI. *On Erosion.*—Besides the general discussion of the phenomena, so profusely displayed along the entire route, this chapter will contain notes on the pot-holes of the Colorado, and on the curious rock-sculpture executed by particles of sand driven by wind and by water. Here, too, will find place an account of some supposed drift-

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gravels, resting on the margin of the Colorado plateau near the Tonto Basin, in latitude 35° north.

CHAPTER XII. *On the Water Supply.*—Treating of the relations of springs to geological features, and of the considerations which should govern search for water by boring.

CHAPTER XIII. *On the distribution and age of the Sedimentary Rocks.*—The fossiliferous beds, of which the age was determined by the expedition, range from the Primordial to the Upper Carboniferous, and rest unconformably on a series of highly crystalline schists, with associated granites. Fossils were obtained from about thirty-five localities, two-thirds of which gave conclusive evidence of their geological horizon.

CHAPTER XIV. *On the geology of the Colorado Plateau.*

CHAPTER XV. *On Volcanic Rocks and Mountains.*—The entire field of our exploration has been the scene of prolonged, or recurrent, volcanic activity, reaching down to so recent a period that it would be rash to assert that it has even now finally ceased. There is no extended mountain range from the sides of which lavas have not flowed, and some are for long distances buried under the material that has found vent along their lines of fracture. From the Timpahute Range westward to the Amargosa, the eastern boundary of Death Valley, a distance of seventy-five miles in a direct line, we traveled entirely on volcanic material, and there is reason to believe that the field stretches northward an equal distance. In this and some other areas north of the Colorado, rhyolitic and trachytic lavas predominate, and volcanic sands and tufas are conspicuous elements of the mass. Farther south, in the vicinity of the Colorado plateau, the latter are rarely seen, and basaltic lavas assume great prominence. The collection of volcanic products is large, and cannot fail, with study, to add something to the rapidly increasing store of facts in regard to the ordinal sequence of lavas.

CHAPTER XVI. *Economic Geology.*—To the difficult and important subject of the geological distribution of auriferous and argentiferous veins, and their relation to the mountain system and to the intruded rocks, we hope to contribute some facts of value.

Our report will record the occurrence and position of coal, salt, gypsum, and other economic minerals. The former has been discovered near Camp Apache in beds of Carboniferous age, and probably referable to the Coal Measures. The seam is of tolerable thickness, but has not been sufficiently developed to test its quality. It will probably prove to be of non-coking, bituminous coal.

CHAPTER XVII. *Paleontology.*—The fossils of the expedition will be placed, I am happy to state, in the skillful and experienced hands of Mr. F. B. Meek, who will study and report upon them.

In the geological collections, limited in extent by the circumstances of transportation, &c., great care was taken to represent the characteristic lithological features of the several geological provinces, the prevalent varieties of rock being studiously preferred to the locally exceptional.

I remain, sir, very truly yours,

G. K. GILBERT.

Lieutenant GEORGE M. WHEELER,
United States Engineers.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 66.

LETTER

FROM

THE SECRETARY OF WAR,

ACCOMPANYING

An engineer report of a reconnaissance of the Yellowstone River in 1871.

APRIL 18, 1872.—Referred to the Committee on Printing.

WAR DEPARTMENT, *April* 17, 1872.

The Secretary of War has the honor to submit to the United States Senate a report of a reconnaissance of the Yellowstone River, made in 1871, by Captains Barlow and Heap, Corps of Engineers, under orders of Lieutenant General Sheridan, and to suggest the publication of the same.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 13, 1872.

SIR: I have respectfully to transmit herewith a report of a reconnaissance made during the summer of 1871, of the sources of the Yellowstone River, by Captain J. W. Barlow, assisted by Captain D. P. Heap, of the Corps of Engineers, under the orders of Lieutenant General P. H. Sheridan, commanding Military Division of the Missouri. A map of the region traversed accompanies the report, and it is suggested that they be transmitted to Congress with a view to their publication.

The map has been drawn upon stone, in this office, and should Congress direct the publication of a considerable number of copies, transfers can be readily prepared and furnished the Congressional Printer.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

The Hon. the SECRETARY OF WAR.

HEADQUARTERS, MILITARY DIVISION OF THE MISSOURI,
OFFICE OF THE CHIEF ENGINEER,
Chicago, Illinois, February 28, 1872.

GENERAL: I have the honor to transmit a copy of my report of a reconnaissance to the sources of the Yellowstone River, made by myself, assisted by Captain D. P. Heap, Corps of Engineers, during the sum-

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mer of 1871. Accompanying this is Captain Heap's report upon the manner of making the maps.

I transmit, also, a copy of a map prepared in this office, under my direction, from an outline furnished by Captain Heap.

Very respectfully, your obedient servant,

J. W. BARLOW,
Captain of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

REPORT OF A RECONNAISSANCE IN WYOMING AND MONTANA TERRITORIES, 1871, BY CAPTAIN J. W. BARLOW, ASSISTED BY CAPTAIN D. P. HEAP, CORPS OF ENGINEERS, UNITED STATES ARMY.

OFFICE OF CHIEF ENGINEER,
HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,
Chicago, Illinois, December 8, 1871.

GENERAL: I have the honor to submit the following report of my reconnaissance through a portion of Montana and Wyoming Territories.

In presenting this report I feel constrained to offer a few words in explanation of its many palpable deficiencies, and also regarding the form in which it appears, viz, that of a journal.

Since my return, other duties, mainly growing out of the destruction of my office, have so constantly occupied my time and attention, that careful study and proper revision of my field-notes have been impossible. But knowing the desire of the Lieutenant General to be informed at the earliest possible moment, upon the nature of the country examined by me, to save time I have found it necessary to retain the form in which my notes were originally taken, and in some instances to copy portions with little revision.

Under these circumstances the report is, perhaps, as accurate, though less satisfactory to the writer, than a more studied composition would have been.

A map of the route traveled, together with several charts of special points of interest, are being prepared as rapidly as possible, and will be presented as soon as they are finished.

Very respectfully, your obedient servant,

J. W. BARLOW,
Captain of Engineers, United States Army.

Lieutenant Colonel JAMES B. FRY,
Assistant Adjutant General, Military Division of the Missouri.

Orders and instructions.

[Special Orders No. 149.]

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,
Chicago, Illinois, July 1, 1871.

Captain J. W. Barlow, chief engineer Military Division of the Missouri, with [illegible] assistants, will proceed via Corinne, Utah, to Fort Ellis, Montana; from the [illegible] named post he will make an exploration of the sources of the Yellowstone. Capt. Barlow will be guided in his duties by the special instructions from the Lieutenant General, commanding.

The Quartermaster's Department will furnish the necessary transportation for the party, instruments, and baggage.

By command of Lieutenant General Sheridan.

JAMES W. FORSYTH.
Lieutenant Colonel, Aide-de-Camp, A. A. A. G.

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HEADQUARTERS, MILITARY DIVISION OF THE MISSOURI,
Chicago, June 26, 1871.

SIR: Captain J. W. Barlow, chief engineer of the Military Division of the Missouri, accompanied by a small party, has been directed to proceed to the head-waters of the Yellowstone River, Montana Territory, and he is hereby authorized to call on you for, and you are hereby authorized to furnish him, thirteen riding-animals fully equipped, and fifteen pack-animals fully equipped; also such commissary supplies as he may need for this party.

Should you not have the pack-mules at your post, and they can be procured from Camp Baker, you are authorized to procure them from that post. If they cannot be obtained from Camp Baker, then Captain Barlow will make his own arrangements for the pack-mules.

It is Captain Barlow's intention to accompany the expedition of Professor Hayden, taking advantage of the escort ordered for him, but as he may desire at times to make side surveys you will furnish him with one non-commissioned officer and five mounted cavalrymen, to be under his special orders for the expedition.

Very respectfully, your obedient servant,

P. H. SHERIDAN,
Lieutenant General.

Captain D. P. HANCOCK,
Seventh United States Infantry, or Commanding Officer, Fort Ellis, Montana.

This reconnaissance was made during the months of July and August, 1871, for the purpose of examining the sources of the Yellowstone, Missouri, and Snake rivers, and the valley of the Yellowstone Lake. To assist me in this duty, Captain D. P. Heap, Corps of Engineers, engineer officer of the Department of Dakota, with his draughtsman, Mr. W. H. Wood, were ordered to report to me. I also employed Mr. H. G. Prout as assistant topographer and recorder. Mr. Thomas J. Hine accompanied the party as photographer. These gentlemen rendered efficient service, and I am greatly indebted to each of them, particularly to Captain Heap, for astronomical observations. The records of these observations, together with notes of the trail, were taken by Captain Heap to his office in Saint Paul, and thus, fortunately, escaped the conflagration of Chicago. The meteorological records were, however, less fortunate, having been destroyed in my office, together with the numerous and interesting specimens I had collected, and which had only arrived in Chicago just previous to the fire. The photographer, also, lost his negatives, consisting of nearly two hundred beautiful views of lake and mountain scenery, including photographs of some of the largest geysers, taken while in action. Sixteen prints were made the day previous to the fire, which Mr. Hine saved. These will but serve as a sample of those destroyed.

The party, as above enumerated, left Chicago on the 2d of July, and were provided with the following instruments for use in the field, viz: two sextants, one artificial horizon, one sidereal chronometer, one mean solar pocket chronometer, two mercurial cistern barometers, one thermo-barometer, two aneroids, two prismatic compasses, three pocket compasses, one clinometer, two odometers, one pair odometer wheels, and a box of tools.

Leaving Chicago at 10.45 a. m., we were carried by the Chicago and Northwestern Railway over the prairies of Illinois and Iowa to the Missouri River, where we arrived on the following morning. After crossing the ferry in a drizzling rain, and calling at General Augur's headquarters, we proceeded on our journey, over the Union Pacific Railroad. Another expanse of prairie lay before us, with the broad and sluggish water of the Platte River on our left. After passing Cheyenne, the elevation rapidly increases, and the country becomes very barren. The soil, dry and parched from want of moisture, was in a condition closely approximating a desert, yielding sustenance only to the hardy sage-bush, which seems to grow almost literally without water.

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We celebrated the 4th of July in crossing the main divide of the Rocky Mountains. Why these mountains are called *Rocky* is not evident until after reaching Sherman and commencing the descent toward the Salt Lake Valley. From this point, however, to the valley, no exception can be taken to the name, the descent being through Echo and Weber Cañons, with rocky gorges, whose walls, in many places, it is said, tower thousands of feet above the river's bed, retaining their snow covering even during this excessively hot July weather. Many of these prominent mountain tops still show evidence of Mormon efforts to resist General A. Sidney Johnston's march upon their territory in 1857. Rude walls occupy their almost inaccessible heights, from whence these people had intended to launch rock upon the advancing troops.

The descent from Sherman to Great Salt Lake Valley is nearly 4,000 feet. On arriving at Ogden, we took the Utah Central Railroad for Salt Lake City, passing through the highly cultivated fields and gardens of the industrious Mormons, over a perfectly level stretch of country lying between the Wahsatch range of the Rocky Mountains on the left and the blue Salt Lake on the right.

After spending a part of the following day in this interesting, as well as beautiful, Mormon city, we returned to Ogden, and thence by the Central Pacific Railroad to Corinne, at which point we changed our mode of traveling for the Montana stage-line.

Another day's delay occurred owing to the difficulty in obtaining accommodation for the whole party and baggage. It was, therefore, on the morning of the 8th, after a refreshing rain of the night before, (very unusual in this region,) that we fairly began our stage ride to Fort Ellis. Two passengers besides my party, seven in all, with 800 pounds of baggage, made a heavy load, and occasioned loss of time during the whole stage-trip. A stage ride, at best, is a cheerless experience, but the Montana route particularly has usually been considered almost unendurable. The heat, the dust, the crowded condition of the stage, and above all the loss of sleep for three or four nights and days, it is said, reduces the traveler to a state bordering on insanity. We were more fortunate, perhaps, than others, inasmuch as our first day was cool, the air being purified by the rain and thunder of the previous night, and by occasional showers during the day.

The second day proved more tedious, our route dragging wearily across the large desert of Idaho, the only interesting occurrence being our arrivals at the successive post-stations at intervals of from twelve to twenty miles. On the third day we crossed the Montana line, in the morning, near Pleasant Valley, where we partook of the best meal upon the whole stage-route. During the day we crossed a divide, separating the tributaries of the Snake River from those of the Missouri. Passed on this day's route some bits of pretty scenery, the Red Rocks and Beaver Head Cañon being the most noteworthy.

After several changes of conveyances, generally for the worse, we were finally introduced, during the third night, to a "jerkey," a two-seated covered wagon drawn by a single pair of horses. At this point (Moore's Junction) Captain Heap and Mr. Wood separated from the party, taking the road to Helena, while the others, including myself, continued our course to Fort Ellis via Virginia City. Spending the remainder of the night and part of the next day in the "jerkey," we reached the latter town at 10 a. m.

Virginia City is situated in a mining gulch, and huddled together in a heap, with small houses and narrow, crooked streets—the people being American miners and Chinese in about equal proportions. The mines

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here were formerly the richest ever discovered; they are now, however, much less so, and are worked principally by the Chinese, who are content to earn but a small proportion of what would satisfy the American miner.

The route from Virginia City to Bozeman, though generally good, crosses some exceedingly steep divides between the Jefferson, Madison, and Gallatin rivers. These valleys are all handsome, fertile regions, and will, without doubt, eventually be peopled by a thriving population. The valley of the West Gallatin is peculiarly inviting. Beautiful green foliage extends along the bank of the river, while majestic mountain ranges shut it in from the outer world, giving it an air of peaceful and home-like security. Already many farms have been cultivated in these valleys; and though irrigation is rendered necessary by the dryness of the climate to insure good crops, yet it is found that the added quality of the grain and the certainty of a good yield counterbalance the extra expense of irrigation. It is reported, also, by residents, that the rainfall is becoming yearly more abundant as new land is brought under cultivation. This being the fact, the necessity of irrigation will in time cease. The mountain slopes are usually well timbered with heavy pine forests.

Three days were occupied at Fort Ellis in active preparation for the field. Instruments were unpacked and put in order, camp-equipage and subsistence stores selected, and provision made for transportation upon pack-animals. It was ascertained that the quartermaster's and commissary departments could furnish nearly everything that was required, in addition to the articles I had brought with me. I increased my party to eleven persons by hiring three civilian packers, two laborers, and one cook. To mount this party I made requisition for twelve riding-animals. For conveying instruments, commissary stores, and other baggage, ten pack-animals were obtained.

Professor Hayden, in charge of a geological expedition, destined to the same field of operations as myself, had been at Fort Ellis for some days, organizing and equipping his party. His was a much larger party than mine, and a company of the Second Cavalry, from the fort, had been ordered to accompany it as an escort, under the protection of which my expedition was also to be made. A guard of one sergeant and five men were, however, assigned to me specially, in case I desired to leave the larger escort at any time for making side surveys. Dr. Hayden proposed to transport his material as far as possible on wagons, then dividing the stores, and leaving with his wagons a portion—to be sent for as might be required—to push on with pack-animals, carrying only the remainder and his other necessary baggage. This idea was good and I adopted it, estimating that ten pack-animals would carry thirty days' rations for my party, besides the other baggage required. This arrangement did not work well, however, when carried out, from the fact that the roads would not permit wagon-transportation sufficiently far, we being only able to reach Bottler's Ranch, on the Yellowstone, with our wagons, a distance of thirty-five miles from Fort Ellis. The passage of our heavily-laden wagons to this point was attended with much inconvenience and labor, and consumed three days' time.

Dr. Hayden was ready to start by the 15th of July, but owing to a delay in the arrival of a portion of my baggage from Virginia City I was unable to move until the morning of the 16th. The escort, company F, Second Cavalry, Captain Tyler and Lieutenant Grugan, also moved at the same time. With the exception of my special guard of six men, the escort took the advance and were soon out of sight, expecting to

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reach a good camping-place, sixteen miles distant, before night. Owing to the hilly nature of the country, I soon found it necessary to devote the whole attention of my party to the wagons, assisting them over bad places and keeping them upright along many of the steep hill-sides. Notwithstanding our labors, one of the wagons was eventually upset, its contents having to be reloaded after righting and replacing the wagon upon the road. A still more serious accident happened a few miles farther on, in the breaking of the same wagon just at the foot of a steep acclivity, which rendered further progress impossible. Night now coming on, dark and rainy, I decided to go into camp at once, only eight miles from Fort Ellis, and to await the arrival of a new wagon-reach, for which I had sent back to the fort. Our cook having followed the escort to the camping-spot which we expected to make, some eight miles farther on, our chances for either dinner or supper were unfavorable. Improvising a lunch from what we could find, and stretching our tent-fly from one of the wagon-tops to the hillside beyond, we rolled ourselves in our blankets, and decided that our first day's march, owing to wagon incumbrance, was almost a failure.

The following morning the march was resumed; but another misfortune occurred at the outset, in the sliding and almost upsetting of the wagon containing my baggage and instruments. It had finally to be unloaded, after numerous efforts to right it had been made without success. Our accidents were now happily over, the mules and drivers behaved better, and the road became less dangerous. At 3 p. m. we reached the point where the escort had awaited us since the day before. We had made but ten miles in two days. This being a fine camping-spot, I decided to remain here until morning, when, by making an early start—the animals rested—we would be able to push on to Bottler's Ranch in one day.

The country thus far passed over was wild and mountainous, generally well timbered, with plenty of good grass and water in the numerous valleys and ravines. A mine of bituminous coal has been opened a few miles from Fort Ellis on this route, and has already yielded a fair quantity of fuel of good quality, some of which has been used at the fort.

At this place we pitched our first camp, consisting of two "A" tents, and a wall-tent fly, with a third "A" tent for the cook and his stores. Our cooking utensils and mess furniture were simple, though sufficient, consisting of two camp-kettles, one bake-kettle, a frying-pan, and a broiler, for cooking; knives, forks, iron spoons, tin plates, and china cups, and a table, completed our mess equipments. The cups, however, became broken from time to time, until all finally disappeared. Here the photographer obtained his first view, with our camp in the foreground, and the thickly-wooded bank of Trail Creek, a beautiful trout stream, as a background.

Our general course to the Yellowstone River was now southeast, down the valley of Trail Creek, which we crossed and re-crossed several times, avoiding dangerous side-hills. The road, however, was generally good, with some sharp ascents, requiring the doubling of our teams. By allowing my horse to graze while waiting for the wagons to close up, the beast took advantage of his liberty, ran off, and followed the main escort, which, as usual, was some miles in advance. I saw no more of him until I had reached Bottler's Ranch.

At different points on the road from Fort Ellis, beautiful vistas of majestic ranges of mountains, lying to the east of the Yellowstone River, were obtained; and now, as we emerged from the winding valleys of

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the mountain region through which we had been traveling for three days, these lofty peaks, from across the river, seemed almost directly above our heads. Conspicuous among them stands Emigrant Peak, near 11,000 feet above the sea, and about 6,000 above the valley. This peak is so named from the mining region lying near its base, called "Emigrant Gulch." The Yellowstone here is a broad, swift stream, some 300 feet wide, and not fordable.

Our course now lay up the west bank of the river, nearly due south. The road, following the nearly level river bottom, was good, except at the crossing of numerous streams flowing into the river at short intervals. These streams would afford convenient means of irrigation, should this valley ever become settled. Several antelope were seen as we came up this valley, none, however, sufficiently near to allow of their being shot.

Opposite Emigrant Peak, a thriving ranch has been established by two brothers, named Bottler, who have several fields already under cultivation. Their crops of wheat, potatoes, and many other vegetables yield an abundant harvest, while in the raising of stock and making of butter and cheese they have met with remarkable success. A ready market for their produce is found in the mining camps across the river. Above this point the valley becomes much narrower, rocky spurs shoot out from the mountain ranges on each side, rendering it impracticable to move with our wagons beyond Bottler's. Here it was therefore decided to leave the train with a portion of our supplies under a small guard, and with saddle-animals alone to continue our progress up the river.

Dr. Hayden had only arrived the day before, as much out of patience with the wagons as myself, and, like me, delighted with the idea of leaving them at this point. One day was spent in arranging materials for packing and taking astronomical observations. We suffered intensely from musquitoes during our stay at this camp. The nights being warm, with occasional showers without wind, there seemed to be no way of avoiding their incessant annoyance.

We had located camp on the second terrace from the river—the broad stony plateau or table-land affording good grazing at this season, though yielding also an abundant crop of a small variety of a very prickly cactus. Stretched out below, the broad bottom-lands of the Yellowstone, with the river running near the foot of the hills on the east, present a wide view to the north, east, and south; while to the west were vast mountains forming a divide between this valley and that of the Gallatin. Our little camp, on the morning of the 20th, presented a scene of great activity. The wagon-mules were being taught another duty; many of them submitted with patience, while others became restive under their packs, and nearly unmanageable. Our pack-saddles did not prove to be just what we needed, being too narrow for the backs of the mules, and thereby greatly increasing their natural restiveness. The packing was eventually accomplished, each mule carrying about two hundred pounds. By 7 a. m. we had started just in advance of Dr. Hayden's party, which, however, came up soon, and traveled in company with mine. Our route lay up the valley of the Yellowstone, nearly due south, for ten miles over a good trail which could easily be made into a passable wagon-road, except at one or two points where some blasting and cutting would be required.

Some very picturesque rocks were passed, many of them standing out like turrets from the ruins of old castles. These rocks are generally volcanic; some fine specimens of basaltic columns were ob-

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served. The river now bends to the eastward; a fine, rushing stream, called Trail Creek, joins the river from the west just at this curve, and caused some delay in crossing. The trail now enters the second or middle cañon of the Yellowstone, and becomes very rough, obstructed by masses of volcanic rock, in some places rendering the footing of the animals very insecure. One pack-animal, belonging to the general escort, made a misstep and rolled down the hill-side a distance of some 50 feet, completely demoralizing his pack, but without serious injury to himself. Just beyond this dangerous pass the cañon widens somewhat, disclosing a grassy valley of several acres, watered by a mountainous stream fed from melting snows above. We had marched but sixteen miles and it was now only 1 o'clock, but as the animals began to show signs of weariness and hunger, Dr. Hayden with the main escort decided to halt in the valley for the night. I was told by one of my packers that another valley, similar to this, with better grazing, would be found a mile and a half farther on. This information led me to proceed to that spot. A still more difficult and rocky pass than the one we had just encountered led to this valley, and I was therefore desirous to get through it while the animals were in good marching condition, and less restive than on first starting out in the morning. Here we found a valley as beautiful as the other, giving abundant pasturage for the animals, while a growth of cottonwood on the river's bank afforded a pleasant camping spot. The surrounding mountains shot up almost perpendicularly to the height of from two to three thousand feet; their lower slopes being wooded, while their peaks were usually bare. The formation here is principally granite rock, with a preponderance of feldspar. Here we caught trout by dozens and found them of excellent flavor and very large; they would bite at almost anything, taking the artificial fly with great activity. I enjoyed a bath in the river, but found the current so swift that I could make no headway against it in swimming, while in standing upright it would almost sweep me off my feet.

There are no practicable fords along this portion of the river except during seasons of low water, in the fall. The night passed at this camp was very refreshing; no mosquitoes nor other troublesome insects disturbed us, though a large rattlesnake was killed in camp soon after our arrival. Following up the Yellowstone Valley, tall mountain ranges continue on either side, the river falls off somewhat in width and depth, and, flowing near the eastern range, leaves a broad spread of rolling country on the right. Several rocky spurs intersected the trail, causing much inconvenience to the animals, and necessitating the dismounting of many of the horsemen. One mule met with a mishap and fell from a steep bank. The odometer wheels slipped at the same place, but without injury. These wheels are drawn by one of the saddle-horses; the saddle, taking the place of harness, supports the shafts, which are lashed thereto. The cart being very light, made of velocipede wheels, and weighing but thirty pounds, is no impediment to the horse or its rider, and can be taken wherever the other animals go. Two small and beautiful lakelets were passed soon after leaving camp, one bearing a perfect resemblance to the figure seven.

Some few miles further on a remarkable mountain, known as Cinnabar Mountain, also as "The Devil's Slide," was passed on the right. This is a curious and strange freak of nature. The upheaval had carried the strata of which the mountain is formed into a nearly vertical position, with their edges standing out toward the valley, a slight twist, or wrench, at the time of the upheaval, giving the strata a curved appear-

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ance. Several stand out a hundred feet beyond the general face of the mountain, and extend, probably, a thousand feet upward, leaving rocky depressions between, and giving rise to the name of "The Devil's Slide." There is ample opportunity for him and all his attendants to find amusement here. A deep-red tinge, from salts of iron, distinguishes this mountain from all others in its vicinity.

On reaching the mouth of Gardner's River, or Warm-Stream Creek, as it is also called, coming in from the southwest and joining the Yellowstone fifteen miles above the middle cañon, we left the trail and followed this valley without crossing the stream.

A few miles above the mouth of this river, a boiling-hot torrent of water, some six feet wide, and a foot in depth, pours out of the hill-side, perfectly clear, though steaming hot. It is probably the outlet of a vast subterranean reservoir of hot water, which supplies the numerous boiling springs upon the mountain-sides above. Near this hot brook are several warm mineral springs, beside which a few invalids had formed a camp, for the purpose of testing their healing properties.

A system of hot springs of great beauty, flowing from the top and sides of a large hill of calcareous deposit, and called Soda Mountain, is found five miles up the left bank of Gardner's River. Here, at the foot of this curious white mountain, we encamped, and remained until the 24th, examining the wonderful spring formation of this region, and the country around it. The central point of interest is the Soda Mountain, occupying an area of a hundred acres, and rising like the successive steps of a cascade, to the height of over 200 feet above the plateau at its base. The upper surface is a plain, composed of many hot springs, constantly sending up volumes of vapor slightly impregnated with sulphurous fumes. The sides of the hill down which the waters of these hot springs flow have become terraced into steps of various heights and widths, some twelve inches in dimension, while others are as many feet. In each terrace there is generally a pool of water, standing in a scolloped basin of gypsum, deposited at the edges by the water as it becomes cooler. These basins are often tinged with pink, gray, and yellow colors, giving to the whole a very beautiful effect.

The rock in all directions has evidently been deposited in the same manner as the Soda Mountain is now being built up. When the formation ceases from a change in the course of the water, the rock becomes friable and disintegrates. After a time vegetation springs up and covers the surface. Many of the basins have the size and shape of bath-tubs, and were used by members of the party for bathing purposes. The temperature varies in the different pools from fifty degrees all the way up to one hundred and eighty, so there is no difficulty in find ing a bath of suitable temperature. A few of these springs are strongly mineral, though most of them are sufficiently pure for cooking and drinking purposes. Near the base of this hill a remarkable column of rock is seen standing 60 feet in height, and nearly vertical; this is probably a defunct geyser. In many places small upheavals have occurred, the rock has been rent open, allowing an escape of steam and gas jets, whose formations in the hot regions beneath can be heard through these openings. The action of these subterraneous waters has, of course, worn out caverns in the rocks beneath, leaving the crust sometimes thin and frail; caution should therefore be exercised in exploring these places. Numerous caves and holes were found in the adjacent hills. I penetrated to the depth of 50 feet in one of the former, and found myself in a vaulted dome 30 feet across and 40 feet high. On the far side was a deep well, dark and gloomy, into which I threw

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masses of rock, but did not venture to explore it personally. The views from this camp are extremely picturesque, combining every variety of mountain scenery, having rocky gorges, in which are usually found mountain streams breaking into cascades and falls at frequent intervals. The opposite bank of Gardner's River is very steep, nearly precipitous, and surmounted by a wall of basaltic columns.

During our stay at this camp I made a circuit of the high red-topped mountain to the west of the springs, near which Mr. Everts, who was lost in the Yellowstone Basin the previous summer, was picked up by the men who went in search of him. The mountain stands in a fork of a branch of Gardner's River, having a cañon on two sides, through which these streams flow in beautiful cascades, with one or two considerable falls. I made this trip in company with Dr. Hayden and one or two others. Though our climbing over rocks and through thickets, and crossing mountain-torrents, proved very fatiguing, we felt well repaid for our labor in observing the grand scenery upon our route. Many fine specimens of geological formation were observed, one of the most beautiful being fan-shaped basaltic formations in great abundance. Skirting the cañon to the south of the mountain for two miles, we crossed, but found the ascent so steep that we were compelled to cling to projecting rocks in many places to prevent sliding back to the bottom. On reaching the plateau beyond, our breath and strength were nearly exhausted. We now ascended to the top of the mountain, leaving our horses about half way up, and continuing the journey on foot. Here a magnificent view of the Yellowstone Valley was obtained, with its mountain ranges stretching away in the distance, southward, to the limit of vision. Also of the country lying west toward the Gallatin River. In that direction is a valley almost level, slightly rising toward the mountains on either side, with a beautiful, clear stream winding through the center, whose current was so gentle that its direction could not, as yet, be determined. Grass and flowers covered the hill-side, interspersed with occasional groves of balsam, cedar, and spruce. High cones of volcanic origin rise here and there in all directions, some of them probably fifty miles distant. The lofty peaks directly west, beyond the valley just mentioned, were probably near the sources of the West Gallatin. This region appears almost inaccessible. Continuing the circuit of the mountain, we returned to camp by way of its north side. Here we encountered another cañon as wild and precipitous as the other, and affording still more beautiful scenery. A clear cut, hundreds of feet in depth, through the mountain's base, allowed the passage of a small stream, which about midway rolled down a slightly inclined and rocky slope, then spread out into a pretty cascade of a hundred feet in height. More desperate climbing followed, and we reached an elevated plateau whose side to the east had, at some time, dropped off, leaving a sheer precipice of seven or eight hundred feet in height upon which we were now standing. Passing further northward we encountered, previous to reaching camp, several spouting hot-springs, throwing up boiling water to the height of several inches.

On reaching camp I learned that one of the cistern barometers had broken while hanging upon a tree, without apparent cause. Toward evening I enjoyed a bath among the natural basins of Soda Mountain. The temperature was delightful, and could be regulated at pleasure by simply stepping from one basin to another. They were even quite luxurious, being lined with a spongy gypsum, soft and pleasant to the touch. I walked over a part of the hill by the faint light of the new moon, which gave to its deep-blue pools of steaming water a wild and

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ghostly appearance. The photographer has taken numerous views of these springs and the country in their vicinity, which will serve to convey a much more definite idea of their beautiful formation than can be given by any written description. A special survey was made of this locality, and careful observations taken of its latitude and longitude.

While at this camp one of the men killed a large brown bear and three cubs. The latter were brought in and served our mess with delicious steak for several meals.

July 24.—Resumed the march, following up the southern branch of Gardner's River. The trail for the first four miles proved very rough, the sides of the valley coming down close to the stream, and very steep. At the end of this gorge a fine water-fall was discovered about 75 feet in height, beyond which the valley became less rocky. I ascended the ridge on the left, hoping to reach the summit of the divide overlooking the Yellowstone Valley several miles to the eastward. After reaching several summits I still discovered higher ones beyond, but finally ascended the last one, and was rewarded by a grand view of an immense extent of mountain scenery. In all directions were seen sharp basaltic peaks, beautifully set off with large fields of snow lying in their upper gorges; quiet, secluded valleys, well timbered hill sides, pretty lakes and mountain streams. Over the whole the sun was shining with great brilliancy, but never oppressively in these elevated regions.

I fell in with Dr. Hayden, whom I found examining this ridge, and together we continued in a southeasterly direction parallel with the valley below, through which our trains were moving. We had proposed ascending this valley as far as practicable, then to strike across the country and meet the Yellowstone opposite the mouth of the East Fork. While we were pursuing our investigations, one of the doctor's assistants came up and reported that his train, with the general escort, had gone into camp some two miles south of the point where he found us, but that my train had not come up. I went to the doctor's camp and learned that none of my party had arrived except Captain Heap and Mr. Hine, who had followed the trail of the doctor's party. A messenger sent by Captain Tyler came back, finding no traces where my party had left the trail. I then decided to go myself in search of them. After considerable examination it was discovered that they had obeyed their instructions, deviated from the direction taken by the doctor's party and followed the course of Black-tail Deer Creek to the eastward, and had struck across toward the valley of the Yellowstone. It would appear to be an easy matter to find where a train as large as mine had departed from the main trail, but in this case no tracks were left in the prairie grass to indicate the point, and it was only after an hour's search that the spot was discovered. Following the trail was in many places difficult, the country being intersected at various intervals by ravines and water-courses, with here and there a meadow, over which the animals had apparently become so scattered that all traces of their footsteps were lost. The country, until we near the river, consists of rolling prairie, dotted with groves of spruce and pine, and well watered with numerous cool streams finding their way northward into Black-tail Deer Creek. The ridges are unusually stony, limestone rock cropping out at their summits. Continuing eastward and passing into a small cañon, rendered gloomy by approaching night-fall, and following over a divide for a few miles, we emerged upon a height overlooking the valley of the Yellowstone. A plain though rough trail led down the mountain-side. The descent was steep and long, through groves of poplars and other small trees, along a nearly vertical hill-side, apparently over frightful

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chasms, rendered wierd and gloomy by approaching darkness. We began to despair, almost, of ever finding the camp, and felt there might be a possibility that we were following a fresh Indian trail. We were soon set at rest, however, as a short time after dark we reached the foot of the mountain and found camp located in a pretty meadow, with a clear stream running through it. The river was about a mile and a half distant. I had ridden thirty miles though the train had marched but seventeen.

The next day was spent in a trip across the Yellowstone, by way of a pack-train bridge recently constructed for the accommodation of parties visiting some new mines about forty miles to the east of this point, on the head-waters of Clark's Fork. The banks of the river here are one hundred feet apart, while a pier resting upon a ledge of rock jutting out from the west side divides the bridge into two spans, the main one being about sixty feet, and composed of heavy pine timbers of that length. A path on either side has been graded down to the bridge, that on the opposite side having been cut from the face of the cliff, the rock of which is composed of soft, shelly, and partially disintegrated slate. The bridge is located just above the mouth of East Fork, a considerable stream, and in seasons of high water is not far below the magnitude of the main river. It finds its sources many miles to the east and southeast, among some of the loftiest peaks of the Rocky Mountain range, and drains, with its numerous tributaries, a vast extent of country. From its extreme source to its mouth, it is probably fifty miles in length. An elevated, rolling country, several miles in extent, lies in the angle of the two rivers. It is intersected by numerous streams fed from the melting snow in the mountains above. In this area were three or four small lakes or ponds literally covered with ducks. Near its center stands a mountain of remarkable appearance, nearly square, with precipitous sides, known as the "Square Butte." I crossed the river, and, passing south along its bank, obtained a view of the cañon of the Yellowstone, which here is very beautiful. Its walls are composed of volcanic conglomerate capped with basaltic columns. Many of the pinnacles remain, towering hundreds of feet in height, having about the proportions of an ordinary sewing-needle. In many places below are observed steam-jets rising from near the river's edge, while indications of sulphur deposit are very numerous. Farther up, I was able to descend to the river's bed opposite the mouth of Tower Creek, coming in from the west. This stream is named from numerous tower-like pinnacles reaching up many feet above its bank. Here were some fine specimens of brimstone deposit from hot sulphur jets along the banks of the river. On the other side were numerous warm springs, which I did not visit.

The trout in this part of the river are exceedingly fine and added much to the variety of our mess. Back from the river to the east the country rises rapidly and soon becomes extremely rugged. High barren peaks are seen rising one above the other, far off to the east and south. I ascended the range to the height of 3,000 feet above the river, and judged that many of the peaks beyond were a thousand or 1,500 feet higher. On these mountains I picked up numerous specimens of petrifactions and some fine pieces of agates and rock crystal. On returning to camp I learned that the other party had passed during the day and had proceeded on as far as Tower Creek, some four miles above.

I broke camp on the morning of the 26th at half-past 7; sent the train over the trail taken the day before by Dr. Hayden, and then, in company with Captain Heap, I made an examination of the river's bank

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and the falls of Tower Creek. The views from the bank of the river on this side were even more interesting than those obtained yesterday. The fall is exceedingly picturesque, and, when seen from below, the stream appears to drop from among a number of tower-like rocks, some of them extending upward more than a hundred feet above the crest of the falls. The fall itself is a sheer descent of 156 feet into a shallow basin. The water then rushes away through a rocky and rapidly descending channel, forming numerous cascades in its course to the river below.

A thick growth of pine and hemlock covers the sides of this gorge. Regaining the trail, which led through moderately open timber, Captain Heap and I pushed on as rapidly as possible, but soon losing all signs of the advance party, Captain Heap returned to pick up the trail; I went forward and soon regained it. I then continued over a beautifully undulating country covered with rich verdure and decked with wild flowers of every hue, many of them unknown in the Eastern States. Yet the elevation here is so great (7,000 feet) that frosts occur every night during the year. The vegetation does not seem to suffer from these summer frosts, the effect upon grass and flowers being apparently but that of dew. The path led to still higher elevations and eventually crossed a mountain range called the "Elephant's Back," forming a part of the rim of the Yellowstone Lake basin. It is this ridge which, cut through by the Yellowstone below the great falls, forms that stupendous cañon, 2,000 feet in depth. A road could easily be constructed through some one of the numerous passes in this range, avoiding the severe climbing necessary by this route. Much timber would have to be removed, however, from these passes before even pack-animals could get through. On this expedition the most annoying and sometimes insurmountable obstacles met with were masses of fallen timber. The trail led within a mile of the highest peak of this range, called Mount Washburne. I wished to obtain a view from this eminence, and with some difficulty succeeded in leading my horse to its extreme top. The summit is composed of broken masses of volcanic rock, literally smoothed or leveled off by the force of the wind, which sweeps with terrible violence over these elevated regions. I had observed large areas of snow several hundred feet below the summit of this ridge, but, upon the peak, I doubt if, even in winter, the wind will permit snow to remain.

From this point mountain peaks were observed in all directions, while the Yellowstone Lake, though twenty miles distant, seemed to lie at my feet. The valley of the river can be seen following the general direction of the mountain-chain to the east, a stern volcanic range of sharp peaks, many of them having the form of the Egyptian pyramids, though, of course, of much greater magnitude. One large mountain of this range had been a landmark for two days, bearing a strange resemblance to a human profile turned toward the zenith. I named it "Giant's Face."

The summit of Mount Washburne is 9,000 feet above the sea, while many of those to the east of the Yellowstone are apparently 2,000 feet higher. I intended making a sketch of the horizon line of country, as seen from this mountain, but so fierce a gale was blowing at the time that I found it utterly impossible to use my drawing materials.

I descended by the opposite side into a precipitous gorge or cañon a thousand feet deep, having to drag my horse down some of the worst places. There was no vegetation, no soil, nothing but volcanic rock, in some places solid, but much of it loose and broken, affording no footing whatever, and compelling the horse to slide for several yards at a time. On one occasion I discovered that I was following the trail of a bear to his den. Soon after emerging from this cañon I became ingulfed in an

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immense pine forest which seemed interminable. In this forest were many open glades covered with grass and flowers. In one of these, quietly reposing, I discovered three fine elk, which, upon my approach, disappeared into the thick underbrush before I could bring my carbine to bear upon them. I had descended the mountain far to the east of the trail, and now taking the direction of the sun I succeeded in traversing the forest and regaining the trail which I had no difficulty in following. A ride of some five miles soon brought me to camp. While in the forest I came upon a valley of chalk-white rock, evidently an old system of warm springs; several small ones were still in operation, giving a perceptible warmth to a small stream flowing through the valley and filling the atmosphere with an intense odor of sulphur.

We had now reached the vicinity of the great falls of the Yellowstone, which should be classed among the most interesting and beautiful of the earth. Lieutenant Doane minutely and graphically describes them in his report, and compares them most favorably with all others on this continent. I viewed them both by moonlight after arriving at camp, and on the following morning. I should describe the upper fall as the embodiment of beauty, the lower one that of grandeur. At the crest of each the river narrows to less than a hundred feet, while its depth correspondingly increases. Above the upper fall the river rapidly descends over a series of cascades, gaining great velocity, whence, upon reaching the brink of the precipice, the whole volume is thrown outward and divided almost at once into drops which aggregate into conical shapes, their apexes projecting forward, not unlike an array of comets. These soon lose their individuality and gradually blend together, forming a dense white mass, which descends in a fall of 115 feet, spreading out at the bottom with the grace and beauty of a lady's ball-room costume. A point of rocks jutting out just in front of and slightly below the crest of the fall, affords a convenient spot for observation, whence the whole beauty of the scene can be taken in at a glance. Here the cañon of the Yellowstone finds its beginning in a beautifully wooded gorge between two and three hundred feet in depth, through which the river flows swiftly, though smoothly, over its rocky bottom, to the crest of the lower fall half a mile below; the river then emerges from between its rocky banks and makes its prodigious leap of 350 feet into the depth of the great cañon. It is no small undertaking to descend the steep and slippery side of the cañon, even to the crest of the fall, while the yellow, volcanic and nearly vertical walls of the gorge beneath bid defiance to the most expert climber. The depths below are filled with hot springs; the rock is soft and crumbling, affording no secure footing, while the river rushes away in a perfect torrent over innumerable cascades and ripples, causing eddies and whirlpools which would dash to atoms any unlucky adventurer who should be so unfortunate as to find himself ingulfed in its waters.

About 400 yards below the lower fall a fine view is obtained from a high projecting promontory. Coming in from the west between the upper and lower falls a small stream flows over several ledges of rocks, giving rise to a number of beautiful cascades, from which the creek derives its name. These are extremely beautiful, though insignificant in comparison with the greater wonders so near at hand. One of these little falls drops into a cavern nearly concealed by overhanging cliffs, thence descending from a low ridge of rocks into a pool of great depth. A portion of the water passes through a crevice, or small tunnel, and darts out through the main fall of the cascade below, giving it a most singular appearance.

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After regaining the trail I hurried on up the river to overtake the train on its way to the Mud Volcano, some ten miles above. I soon came to the wreck of a pack-mule, which had made a false step in getting over a fallen tree, and had rolled, end over end, down the hill. His pack, consisting of the photographer's apparatus, escaped without serious injury. The scenery along the river above the falls is quite tame, compared with the wildness and grandness of the regions I had just left. The river, a broad, smooth stream, flows over a sandy bed, with gently sloping banks, generally well wooded. No noisy cataracts break the Sabbath-stillness of this region. No volcanic agencies seem to have been at work here. One would expect to find farm-houses and hamlets in so quiet and peaceful a valley.

Many small streams, coming in from the distant mountains, and a rolling prairie of several miles extent, was crossed during this day's march. I discovered a hillock composed of pebbles of obsidian, somewhat resembling coal-cinders. Toward the western verge of this prairie a hill of white rock was discovered which, upon investigation, proved to be another of the "soda mountains," as they are called by the hunters. Approaching nearer, I found jets of smoke and steam issuing from the face of the hill, while its other side was hollowed out into a sort of amphitheater, whose sides were steaming with sulphur fumes, the ground hot and parched with internal fires. Acre after acre of this hot volcanic surface lay before me, having numerous cracks and small apertures at intervals of a few feet, from whence were expelled, sometimes in steady, continuous streams, sometimes in puffs like those from an engine, jets of vapor more or less impregnated with mineral substances. I ascended the hill, leaving my horse below, fearful that he might break through the thin rock-crust, which in many places gave way beneath the tread, revealing caverns of pure, crystalized sulphur, from which hot fumes were sure to issue. These crystals were very fine, but too frail to transport without the greatest care. A large boiling spring, emitting strong fumes of sulphur and sulphureted hydrogen, not at all agreeable, was also found here. The water from this spring, over-running its basin, trickled down the hill-side, leaving a highly-colored trace in the chalky rock. Upon the opposite side was found a number of larger springs. One, from its size and the power it displayed in throwing water to the height of several feet above the surface, was worthy of notice. Near this was a spring having regular pulsations, like a steam-engine; giving off large quantities of steam, which would issue forth with the roar of a hurricane. This was, in reality, a steam volcano; deep vibrations in the subterraneous caverns extending far away beneath the hill could be distinctly heard. In searching through the thick mass of timber west of this region for other curiosities, Captain Heap and I became almost locked up in a labyrinth of fallen timber, so dense, and so inextricably interlaced, that it was with the greatest difficulty we finally found our way out again. The country, from this point to the Mud Volcano, was mostly rolling prairie, intersected with several streams flowing into the river, some of them having wide estuaries and adjacent swampy flats covered with thick marsh-grass in abundance. Ducks are usually found in these sluggish streams, as well as in the little lakes so numerous throughout this whole region. We camped on the bank of the river, in the immediate vicinity of the mud geysers. These being the first specimens of the true geyser yet seen, we examined them with much curiosity.

July 28.—Remained at this camp throughout the day examining the springs, and crossing the river on a raft for the purpose of ascertaining

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if the same phenomena existed on the opposite side, several steam-jets being visible among the hills beyond.

The central point of interest here is the Mud Volcano, which has broken out from the side of a well timbered hill. It has a crater 25 feet across at the top, gradually sloping inward to the bottom, where it becomes about half this diameter. Its depth is about 30 feet; the deposit is gray mud, nearly a pure alumina, and has been thrown up by the action of the volcano at no very distant period. The rim of the crater on the down-hill side is some 10 feet in height, and trees 50 feet high and 100 feet distant are loaded with mud thrown from this volcano. The surface of the bottom is in a constant state of ebullition, puffing and throwing up masses of boiling mud, and sending forth dense columns of steam several hundred feet above the surrounding forests. This column of steam can be seen for many miles in all directions. Some 400 yards from this crater are three large hot-springs of muddy water, one of which proved to be a geyser having periods of active eruption about every six hours. The phenomena attending these eruptions are as follows: Soon after the violent period passes, the water in the pool gradually subsides through the orifice in the center, the surface falling several feet. The water almost entirely disappears from sight, when it gradually rises again until the former level is reached, during which occasional ebullitions of greater or lesser magnitude occur; great agitation now ensues; pulsations at regular intervals of a few seconds take place, at each of which the water in the crater is elevated higher and higher until finally, after ten minutes, a column is forced up to the height of 30 or 40 feet. During this period waves dash against the sides of the surrounding basin; vast clouds of steam escape; a noise like the rumbling of an earthquake takes place; suddenly, after about fifteen minutes of this commotion, the waves recede, quiet is restored, and the waters sink gradually to their lowest limits. They soon rise again and repeat the same operation. The water from this geyser does not flow away, as the spring occupies the center of a basin 60 yards in diameter and 12 feet in depth; a channel from this basin, however, serves to conduct off any excess of surface-water that may flow in from the hill-side above.

The supply of water is diminished by a constant loss of vapor, and, if not re-supplied, the spring in time dies out. Evidences of extinct springs are quite numerous in this vicinity. Close by are a great many very small boiling-mud pits, a plastic material resembling mortar in color and consistency, worked smooth by constant mixings which it has received for an indefinite period. To the north of the geyser are numerous sulphur jets, small rills from which were depositing a sulphurous slime along their channels. The warmth and mineral properties of this material give rise to a rank vegetation.

At the head of a small ravine still further to the northward is a cavern extending fifteen feet into the side of a hill, and about six feet across at the opening. It is lined with variegated colors deposited from the vapor constantly issuing from its extreme depths, while the channel of the small stream leading down the ravine is also colored by a similar deposit from the escaping waters. The amount of steam forced out from this cavern was immense, causing great agitation of the water within, and giving rise to a roaring and splashing sound as of heavy waves breaking upon a rocky shore.

There are many ponds, varying in size from an ordinary sitting-room to a half acre in extent, all warm or hot, some of them boiling and giving off dense masses of steam, usually in regular pulsations. I enjoyed

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a steam bath at the mouth of the cavern-spring. The water was much too hot for bathing, and the stones upon which I stood would have burnt my feet but for the precaution of keeping on my shoes.

A slight pungent odor, not strong enough to be offensive, pervades this entire region. I found little of interest to repay me for the labor of crossing the river. The raft was swept rapidly down the current, and soon got beyond the depth of our poles, and only by dint of severe paddling were we able to cross and return. Captain Heap and myself were the only persons who ventured upon the raft, and upon our return no one followed our example. Four or five small mud-craters were discovered giving off steam and occasionally sending up small quantities of thick mud, some of which was sufficiently pure and fine to serve for the manufacture of porcelain or china ware.

July 29.—Sounds resembling a human voice calling for help were heard at intervals through the night; it is supposed they proceeded from the throat of a species of panther, called the American lion. I saw the skin and claws of one of these animals at Bottler's Ranch, which had belonged to a formidable specimen of this genus. I judged that an encounter with one would not be altogether safe. In size it must have been somewhat under that of the lions usually seen in menageries, though from the appearance of its head and claws it must have nearly equaled them in strength and fierceness.

After witnessing the morning eruption of the mud-geyser, which occurred at 6 o'clock and lasted nine minutes, attended with the usual phenomena, we continued our march to the Yellowstone Lake, about eight miles distant. The trail proved generally easy, skirting the river, which now becomes much broader, with gently sloping banks and broad grassy meadows. It seemed almost incredible that so tame and quiet a scene could be found in the midst of a region usually so wild and terrible. Just before reaching the lake we crossed a broad prairie extending several miles to the northward, and a continuation of the one met with on our march from the falls to the mud-springs. We crossed this prairie after emerging from a fine grove near the river, and found ourselves near the beach of the Yellowstone Lake. A beautiful picture is this clear blue sheet of water nestling among the snow-peaks of the highest mountain-range on our continent. The rim of this lake-basin is composed of a mountain range varying from nine to eleven thousand feet in height above the sea, and inclosing an area of about one thousand four hundred square miles. Beyond this rim the water-slopes descend in all directions, and furnish the sources of the principal rivers of the continent. Four of the most important tributaries of the Missouri, viz, the Big Horn, the Yellowstone, the Madison, and the Gallatin, carry the melting snows from these mountains northward, and then through the Mississippi Valley to the Gulf of Mexico, more than three thousand five hundred miles. The Snake River, having its sources actually interlaced with those of the Yellowstone and Madison, traverses in its westward course nearly a thousand miles before it mingles its waters with those of the Columbia on its way to the Pacific Ocean.

Again, the Green River, rising but a few miles from the sources of the others, seeks the deserts of Colorado, and after innumerable windings in those deep cañons, at length, after a course of one thousand five hundred miles, reaches the Pacific through the waters of the Gulf of California.

The dividing point in this central region of the continent is Union

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Peak, situated south of the Yellowstone Lake, its extreme height being nearly 14,000 feet above the sea.

We located our camp at the edge of the bluff, some 20 feet above the beach below. A cold stream furnished us with water, and numerous fallen trees afforded us plenty of wood, while the fine meadows of the adjacent prairie supplied excellent grazing for the animals. The lake is very irregular in outline, and about twenty miles across. Several high promontories project from the southern and western shores far out into the lake, greatly diminishing its apparent extent, and forming several large bays and inlets. With the exception of the northeastern angle, heavy masses of timber cover the lake shores quite down to the water's edge, rendering its circuit attended with great difficulty. On the eastern and southern sides the mountain ranges are continuous, while to the southwest and west breaks appear, through which issue many of the sources of the Snake River. In the latter direction, some ten miles from the lake, stands a very conspicuous peak, its outlines sharp and conical, and at this distance appearing almost covered with snow. This proved to be, upon subsequent investigation, 10,500 feet in height.

The water of the lake is cool and tolerably pure at this point, but, being somewhat impregnated with vegetable matter, we preferred the mountain stream for drinking and cooking. The fish found in the lake above the falls are very numerous; all of the same variety, namely, a fine large species of trout; but as many of them have long white worms in their flesh, we discontinued catching them. The fish did not seem to suffer from the effect of the worms, whose existence was probably due to the influence of warm or chemical springs found in many parts of the lake.

July 30.—The party remained in camp at the lake. I attempted to cross with a small force to the opposite side of the river for the purpose of examining the eastern shore of the lake, and had a small raft constructed of pine logs sufficiently buoyant to sustain four men and as many horse-equipments. The horses were expected to swim. The river here at the outlet of the lake was deep, 400 yards wide, and the current swift. After several ineffectual attempts to get the animals across, the exploration was made on foot, the raft answering its purpose very well. We went as far south as Pelican Creek, about one mile from the mouth of the river. A long sand-bar here reaches out into the lake, the resort of numerous water-fowls. A large portion of the side of the mountain to the east is composed of white rock, evidently another vast warm-spring formation. One of our horses was taken sick to-day, with indications of poisoning. The attack, however, did not prove to be fatal.

The nights are beautiful in this valley. This evening's full moon, as it rose above the mountains beyond the lake, was reflected across to my camp in a broad belt of golden light as brilliant as the moon itself.

The thermometer descends from six to ten degrees below the freezing point, and yet the morning's sun melts the frost-work on the most delicate flowers without causing their bloom to fade or their leaves to wither.

July 31.—I started to-day at 8 a. m. for the valley of the Madison, to examine the basin of the great geysers. From the representations of one of my packers I had determined to retrace my steps on the trail, back toward the Mud Springs about five miles, and then crossing the open prairie ten miles to the west, and after examining a system of boiling springs on its western verge, to strike directly over the dividing ridge, and through the unknown forest lying beyond. By this route I

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would have open country more than half the way, while by taking a more direct course the route would be through dense forests the entire distance. Dr. Hayden, with two or three of his party, proposed to accompany me, but, just before starting, changed his mind, and, piloted by two hunters whom we had met the previous day, and who were journeying towards the head-waters of the Madison upon a trapping expedition, started an hour before I was ready, by what they supposed to be a shorter route, entering the woods at once. On leaving the trail along the river's bank, I crossed a low ridge and entered upon a broad, smooth valley, leading nearly due west. This valley was occasionally intersected by ravines, in which were usually found cold mountain-streams of pure water. It was covered with grass and wild flowers in great profusion. Twenty-seven varieties of the latter have been already counted. Ten miles west of the river we came upon a very hot stream, formed from the overflow of a large system of springs in some respects more interesting than any we had yet encountered. One, with a curious crater, was constantly throwing up boiling water to the height of several feet. The crater is of calcareous rock, 6 feet in diameter, and bears a strong resemblance to a human ear. A beautiful branch joins this stream from the northwest, cool, and highly impregnated with alum. The water from these springs is remarkably clear and colorless, except that from a single one which had the bright color of gamboge. On both sides of the hot stream the ground is a soft, hot marsh, very dangerous to examine, and it is only in the immediate vicinity of the largest springs, where a rocky deposit has been formed, that one is entirely safe. A steam-jet flowing beneath the surface of the water into the stream, at one point presented a very interesting appearance and gave off a very novel sound, something like that made by the spindle of a spinning-machine.

Beyond these springs our course lay through a small but wild and pretty cañon, having five gates fifty feet in height, at intervals of about one hundred feet. Continuing two miles further up this winding ravine we reached a forest, where we encountered some difficulty from undergrowth and masses of fallen timber. For the first three miles, however, the wood was comparatively open and our progress easy. Then we came upon an immense area covered with sulphur-vents, each hill-side containing thousands of these little crystal chambers, which, upon being broken into, sent forth quantities of sulphurous steam. In passing through the orifice from below, this vapor had been sublimated into beautiful crystals of pure sulphur, varying in dimensions from the size of a needle to the thickness of the finger, while some were even larger. The country presented the appearance of a vast lime-kiln in active combustion. The crust of soft white rock was exceedingly thin, requiring great caution in picking a route for the animals. We were soon on the crest of the divide between the waters of the Yellowstone and the Madison, and it became necessary to push on in order to reach water and grass before night-fall. The thick underbrush and fallen timber now became almost impassable, while the rough surface of the mountain, cut into sharp gorges, with rugged, precipitous sides, rendered anything like a straight course out of the question. The pack-animals suffered terribly; their packs were constantly disarranged and frequently torn open from severe contact with trees, and it often became necessary to cut our way through some of the worst places. Toiling on in this manner for five miles, but still making some progress toward the Madison Valley, we were overtaken by Dr. Hayden. In company we descended the mountain and eventually reached a branch of the Madison, where

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we camped for the night. This stream, we afterward ascertained, joins the Firehole River—the main eastern fork of the Madison—some eight miles further down. It is here fifteen feet wide and four feet in depth. The divide crossed to-day was not high—only about a thousand feet above the valley on either side. The distance was twenty-five miles.

August 1.—We discovered a brimstone valley about two miles up the stream, in which were a great many hot springs flowing into and raising the temperature of the creek. There are many of these brimstone basins, their general characteristics being about the same. I took the temperatures of many of the springs in this one, which were recorded as follows: Small white sulphur spring, temperature 128°; another, 5 feet across, with black deposit, 172°; a small bubbling spring, 179°; the hottest found in this basin, 199°. One beautiful spring, with light yellow deposit, 182°. These were the principal springs found in this basin. In addition to the springs, and covering the side of the valley, were numerous steam-jets issuing from little apertures, which were always found to contain beautiful specimens of crystalized sulphur.

I moved camp in the afternoon at half-past 4 o'clock, following the course of the stream in a southwesterly direction, passing numerous hot springs from 140° to 190° of temperature, impregnated with various mineral salts, principally iron, alum, and sulphur.

A mile from camp we passed two very large springs, 20 and 40 feet across respectively. Another mile brought us to a warm creek, which I followed up, thinking there might be geysers towards its source, but found only another of the numerous brimstone basins. We soon struck a good trail, which led down the stream, crossing and recrossing as the necessity of the country demanded, and finally passed through a deep cañon with steep rocky walls on either side. After traveling about eight miles we came to the junction of the valley with that of another stream coming in from the south, which subsequent investigation proved to be the Firehole, or, more properly, the river of the geysers. Near the junction of the two valleys was a sharp conical butte, evidently of spring formation, as were also the extreme heights of the ridges between which we had been traveling.

Just beyond this butte the nearly level valley of the Firehole River appears some two miles across and three miles in length. At the southern extremity of this plain a high terraced hill was seen throwing up vast clouds of steam with occasional jets of water, while in many other directions, among the trees and on the sides of the valley, numerous steam columns were visible. The plain was covered with a whitish spongy soil, checked into squares in drying, showing evidences of having been recently overflowed. As it appeared boggy we passed around it to the eastward and ascended the large white hill composed of calcareous deposit, our horses occasionally breaking through its thin covering.

In returning to the point from which we entered this valley we rode directly across the plain, and found that it was marshy only in appearance. Half a mile back from the valley I found the train just unpacking in a beautiful park of firs with a broad meadow just in front. No artificial arrangement of trees could have been more perfect. I learned that one of the escort, (Private Canter,) had not come in with the rest and was probably lost. As I had given instructions to the whole party that, in case any one lost his way, he should return to the previous camp and there wait to be sent for, I did not feel very anxious regarding him. I gave the sergeant directions to return at daylight to the previous camp, where the man would undoubtedly be found.

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August 2.—Canter did not come in during the night; Sergeant Blade and Private McConnel went in search of him at daylight, and found him at the old camp.

The group of hot springs or geysers forming the terraced hills of the south is very interesting, consisting of a large number of springs, ranging in size from a mere point to a hundred feet in diameter. Some are geysers having regular periods of activity, throwing up columns of water to the height, in some cases, of 30 or 40 feet. Many of the small ones seemed constantly active, but eject water only a few feet above the surface. One small geyser has periods of action every fifteen minutes, throwing a column of water 30 feet high. Another, with an irregular but beautifully formed crater, gave off occasional bursts of steam and water, shooting the latter to the height of 20 feet. The whole system, however, furnish at this date but a small quantity of water, forming a stream only 2 feet wide and 3 inches deep. A beautiful feature near this hill is a mud-spring, 150 feet across, containing about a thousand little jets of steam, each shooting up minute particles of fine, soft clay, worked ready for the molder. This clay was pure white, and capable of producing the finest porcelain. The clay of several other springs near by was beautifully tinted in pink and orange colors. The water from the geysers is nearly pure, though holding in solution silicates of lime and magnesia, which are slowly deposited at the craters in beautiful bead-like drops of infinite shape and variety. The craters are all low, showing their recent origin, being elevated but from 2 to 6 feet above their orifices, though the hill, which has been formed by the united efforts of all, rises 100 feet above the plain below. There are about a hundred thermal springs in this system, the largest being at the extreme height of the elevation. It is of a bright-blue color, 30 feet in depth, with rocky caverns beneath, the temperature being nearly up to the boiling-point. This is a geyser, having periods of action every twelve hours. Previous to an eruption the surface of the spring gradually rises about six inches, and expands over an adjacent pool, the whole covering about half an acre. Steam-bubbles issue from the caverns beneath, the temperature rises, larger jets of steam escape, accompanied with the bubbling up of the water. After an hour's preparation of this character a sudden rush of an immense and powerful mass of steam occurs, which carries with it a column of water to the height of 30 to 60 feet, spouting out in all directions, and descending in a shower upon the surrounding rock to the distance of 30 or 40 feet from the crater. The eruption lasts three-quarters of an hour, and a large quantity of water is discharged.

Between the present camp and the Firehole Valley is a group of beautiful springs, which in a country where these curiosities are not so common would receive much attention. One 4 by 5 feet in diameter, and 50 feet deep, is surrounded with a hard rocky rim. The water was a clear blue, whose temperature was 190°. Close by was a large spring, 10 by 20 feet across, having a soft slimy deposit impregnated with salts of iron, its temperature 126°; another, having a similar deposit, but formed in large sheets resembling raw hides in a vat. Across the plain to the west were found several mud-springs in a ravine near a small pond. Here tracks of deer, elk, and buffalo in great abundance were seen. Farther to the north was found another system of hot springs, shooting up plastic mud of a light gray color, having the consistency of thick cream. One of these springs was 100 feet across and contained ten craters, which threw up mud 8 feet high. The Firehole River at this point is a broad shallow stream from 100 to 200 feet in width, and about 2 feet deep. The bottom is hard lava, through which boiling springs

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bubble up in many places. The banks are often swampy, though in many places covered with calcareous rock deposited from warm springs. The creek upon which I encamped makes a bend to the north and enters the river a mile below. I descended the river six miles to ascertain at what point another branch, supposed to come in from the west, joins it. I found no streams entering this river from either side in that distance. The valley gradually contracts, and, after four miles, becomes a cañon difficult of passage. I was now satisfied that I had entered the Fire-hole Valley below or to the north of the great geysers, and decided to move to the south in search of them. Leaving directions for camp to move across the plain about two and a half miles and locate near the geyser-hill before mentioned, I ascended the river a distance of a mile further, and came upon another group of interesting springs, in some respects more beautiful than any yet discovered. A hill, sloping 50 feet up from the river's bank, down which five streams of boiling water in porcelain channels of variegated colors, varying from bright saffron to a deep vermilion, rippled over cascades worn in the terrace formation of the rock. Upon the crest of this hill, from which the rock sloped in all directions, was found a spring or small lake just even with the crest, 200 yards in diameter and nearly an exact circle. The middle waters were deep ultramarine blue, while its concentric rings varied through nearly all the colors of the rainbow, being green, yellow, orange, and red. The edges for some distance down the slope were a bright vermilion. Masses of vapor were constantly rising from the surface of this lake. Between this large spring and the river a huge chasm in the rock was found 100 feet long and 30 feet broad, revealing another spring of most astonishing beauty. The rock had evidently fallen in and disappeared in a cavity of great depth, as the sides of the chasm, some 15 feet high, were rough and ragged, showing quite a recent fracture. The depth of this spring was immense toward the center. The waters were as clear as crystal, and the color of turquois. The caverns seemed lined with silver, and these extended in several directions beneath the hill. From the surface of the water a vast cloud of steam was constantly rising, producing an effect upon the mind of something terrible and unreal, and at the same time very fascinating. Another large spring, of a clear green color, and several smaller ones, were found in this group.

August 3.—About ten miles west of our camp, beyond the river, and across several open patches of meadow containing numerous hot springs, where the water in many places spreads over low sunken ground, causing deep and dangerous warm marshes, stands a singular pair of buttes, almost identical in size and general appearance. A narrow ridge rising half way to their tops connects these mountains together. They are called the "Twin Buttes." In company with Dr. Hayden I ascended to the top of the first one, from which a fine view of the surrounding valley was obtained. These mountains are volcanic in their origin. An orifice at the base of a huge rock near the crest of the one I ascended still ejects a current of hot vapor, with a loud, hissing sound. The top of this butte was found to be 600 feet above the plain. I was disappointed in not obtaining a more extended view to the west, the trees in that direction growing quite to the top of the butte, allowing but a glimpse of the mountain range beyond. The west branch of the Madison is undoubtedly just over that range, a high, precipitous, and densely wooded ridge 1,500 feet in height, and very difficult of passage. To the east the view was less obstructed, and I was able to take in at a glance nearly the whole of the lower geyser basin, with its hundreds of boiling springs scattered through the valley, over an area of four miles in length

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by about two and a half in width. A steep precipice was observed to the south, its face looking exactly north, from whose crest a tiny stream descended in a narrow and graceful fall. I determined to visit this fall, and after a great deal of rough climbing over rocks, through deep and thickly wooded ravines, reached its foot. Here were some of the largest pines I had seen, towering upward a hundred feet, as though ambitious to reach the crest far above. The fall proved upon measurement to be a clean descent of 250 feet, and dropped into a shallow and pretty basin at the foot by the cliff. I named this fall the "Fairy." On climbing to the crest I picked up some beautiful specimens of jasper and agate, and plucked some lovely flowers of an unknown variety on the brink above. I had a severe climb up a nearly vertical rock, and on reaching the top was completely exhausted. I found a more easy point by which to descend. A very pretty cascade was discovered a few yards above the brink of the fall.

August 4.—It rained last night, which is very unusual. The shower, however, was only a slight one, accompanied with a good deal of wind. A dense fog lay on the ground early this morning, but was soon dispelled by the rising sun. I sent the train up the river, with directions to proceed six or eight miles and go into camp, thus giving me an opportunity to explore the adjacent country for other thermal phenomena. A ravine to the southeast of the geyser-hill valley contains several large springs, which I had not yet examined. I took them in my route.

A lake of hot water, 100 by 200 feet in extent, was discovered; also a fine geyser, throwing water to the height of 50 feet. Beyond, was a vast hot marsh, which I was obliged to skirt for a long distance, it being too soft to bear the weight of a horse. Here was discovered a very beautiful spring, having a scolloped curbing of rock 12 feet across, and surrounded by numerous pockets, in which were deposited a quantity of little pebbles as smooth as polished marble. I procured quite a number of these; also some other specimens of deposit, enameled with silica. In the center of this plat, about two miles in area, stands a crater 15 feet high, upon a basin of about the same height. This is an interesting crater, throwing a small stream to the height of about 6 feet. It is rapidly going to decay, the supply of deposit not equaling the amount expoliated by the action of the elements. It is soft and crumbling, and steam issues from its sides in many places. Around this plain the trees have been killed by the action of hot water, often overflowing the basin. Their trunks, for several feet from the ground, are denuded of bark, and are crusted with a white deposit of silicious rock. Continuing on to the southwest, through thickly timbered and broken country, Captain Heap and I reached the river at the site of the beautiful group of springs seen two days before. From this point onward, the mountains, from 800 to 1,200 feet in height, close in near the river, narrowing the valley to about a quarter of a mile, many beautiful and curious springs and small geysers were found at frequent intervals all along the banks of the river. Any one of these would be a study in itself, was there none other to demand attention. A pair of twin geysers was particularly noticeable, one throwing out sudden gusts of steam, the other responding regularly with a spout of water, 20 feet in height, at an oblique angle. Following the trail of the party in advance, occasionally losing it in the marshes and fallen timber, we hurried on, crossing and re-crossing the river in several places. The stream here has a fine rushing current, from 6 inches to 3 feet in depth, 50 yards wide, and flowing over a smooth, rocky bottom. The valley is well wooded with

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spruce, pine, and cedar, and is interscected by several cold streams as well as numerous warm ones.

Three miles beyond the twin geysers was found a system of hot springs and geysers, extending across the river and covering an area of several hundred acres. One of the most interesting of this group is a minute geyser emitting jets of water at intervals of every three minutes, in two or three convulsive puffs, to the height of 30 feet. The peculiarities of this crater are very marked, it having an entanglement of roots just at its opening. These have become incrusted and partially petrified with silicious deposit, causing them to resemble frosted silver. At the west side of this river at this point are ten large springs, three or more geysers, and numerous smaller springs, some of which are probably geysers. One of the large springs was exceedingly beautiful, being 15 by 18 feet across and gradually decreasing in diameter toward the bottom. The transparency of the water, though of a deep-blue color, rendered every outline of its sides as clear as if it contained but air. At the center the depth must have been 40 feet or more. Around and near this spring were dozens of little springs sputtering and hissing upon their own individual account. One hundred yards south of this transparent pool is a remarkably fantastic crater, consisting of a huge fissure in the rock, around which has been formed by deposits a most curiously wrought net-work of white mineral, resembling delicate tracing of frost-work. The river flows to the east, across which can be seen numerous steam-jets, while on this side are more than twenty between the large spring and the river. Many of the springs have double or twin craters. The rock in many places is thin and friable, and, upon being broken through, dark, smoking holes filled with boiling water or mud are revealed. It is not unusual to find springs within a few feet of each other, standing at a great difference of level; where both are boiling this is very remarkable. A triple geyser constantly in action deposits a substance resembling sponge, both in color and texture. Continuing up the stream we passed many single springs with lovely blue depths, also many steam-jets. In one large spring a pine tree had fallen, its whole top being submerged; the branches, cones, and needles were all completely incrusted with a rich coating of mineral, like frosted silver. It was fast becoming petrified, the wood already having partially changed into stone, being yet soft, having about the consistency of lard.

The valley now becomes wider, and soon another basin, containing an immense system of geysers, was entered. From their number and magnitude it seems probable that we had reached the Firehole basin, described by Lieutenant Doane. Subsequent investigation proved this to be the case. This basin is two miles in length by about one-half mile in width, the river traversing it in a winding course, whose general direction is from southeast to northwest. The stream is very rapid, having a smooth bed of lava; is about 30 yards in width and from 6 inches to 3 feet in depth. The hills on either side are rocky and heavily wooded, rising from seven to twelve hundred feet above the valley, and nearly inclosing it. The scene, as we entered from below, was grand and imposing. Along both banks, and extending back into the forest, were numerous steam-jets rising in soft masses of cloudy vapor to the altitude of several hundred feet, while dotted over the whole extent of the basin were seen numerous columns of water in the form of fountains playing at various heights.

I found the camp located on the east side of the river, near a small pine grove, with good grass in the bottom. Soon after arriving a shout was heard near the hill-side, a hundred yards distant, and upon rushing

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out in that direction a huge mass of steam was seen issuing from a crater at the base of the hill, accompanied by a column of water rising to a height far exceeding that of any geyser I had yet seen. This grand fountain continued to play for several minutes, when dying down, I approached to obtain a closer view of the aperture whence had issued such a powerful stream. A sudden gush of steam drove me away, following which the water was again impelled upward and upward, far above the steam, till it seemed to have lost the controlling force of gravity, and that it would never cease to rise. The roar was like the sound of a tornado, but there was no apparent effort; a steady stream, very graceful, and perfectly vertical, except as a slight breeze may have waved it to and fro. Strong and smooth it continued to ascend like the stream from a powerful steam fire-engine. We were all lost in astonishment at the sudden and marvelous spectacle. The proportions of the fountain were perfect. The enthusiasm of the party was manifested in shouts of delight. Under the excitement of the moment it was estimated to be from three to five hundred feet in height. Comparing it with the Fairy Falls, seen the day before, which measured 250 feet, I have no hesitancy in stating that this geyser played to the height of over 200 feet. It commenced at 5 p. m., and continued twenty minutes. Three days were devoted to the examination of the springs in this basin, viz, the 5th, 6th, and 7th of August, during which period a special survey of the valley was made, and the height of some of the important geysers measured.

The longer I remained the more firmly I became convinced that a thorough solution of the wonders of this valley can only be obtained by long and patient investigation during the whole season, by a corps of observers stationed at several points in the basin, whose duty it shall be to accurately record every phenomenon attending each spring. During my stay I was only able to study the most general features of a very few. There may be many geysers, some perhaps more powerful than those I saw, whose period of action failed to occur while my party were in the basin. Indeed, the "Giantess," described by Lieutenant Doane as being the most wonderful geyser in the basin, was not seen to play by any of my party; while the fine geyser near my camp, named by me the "Comet," was entirely unnoticed by the party visiting the valley last summer. I made careful preparations to measure the height of the latter should it play again, but though I remained three days, principally for that purpose, the following displays occurred in the night, the intervals of rest being about twenty-eight or thirty hours.

GENERAL DESCRIPTION OF THE GREAT GEYSER BASIN.

Entering the basin from the north and following the bank of the stream, whose direction is about northeast, a series of rapids near together is encountered where the river makes a sharp bend to the southwest, at which point is found a small steam jet upon the right. A warm stream comes in from the left, falling over a bank 10 feet in height. A short distance beyond a second rapid is found, and then another about 100 yards farther on, where the gate of the geyser basin is entered. Here, on either side of the river, are two lively geysers, called the "Sentinels." The one on the left is in constant agitation, its waters revolving horizontally with great violence, and occasionally spouting upward to the height of 20 feet. Enormous masses of steam are ejected. The crater of this geyser is 3 feet by 10. The opposite "Sentinel" is not so constantly active, and is smaller. The rapids here are 200 yards in

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length, with a fall of 30 feet, following the bank of the river, whose general course is from the southeast, though with many windings. Two hundred and fifty yards from the gate we reach three geysers acting in concert. When in full action the display from them is very fine. The waters spread out in the shape of a fan, in consequence of which they have been named the "Fan" geysers. A plateau opposite the latter contains fifteen hot springs, of various characteristics. Some are of a deep-blue color, from sulphate of copper held in solution, and have fanciful caverns, distinctly visible below the surface of the water. The openings at the surface are often beautifully edged with delicately wrought figures of scolloped rock. One variety deposits a red or brown leathery substance, partially adhering to the sides and bottom of the cavern, and waving to and fro in the water like plank. The size of these springs varies from 5 to 40 feet in diameter. One hundred yards farther up the east side of the stream is found a double geyser. A stream from one of its orifices plays to the height of 80 or 90 feet, emitting large volumes of steam. From the formation of its crater it was named the "Well" geyser. Above is a fine swamp of cold water, opposite which, and just above the plateau previously mentioned, is found some of the most interesting and beautiful geysers of the whole basin. First we came upon two small geysers near a large spring of blue water, while a few yards beyond is seen the walls and arches of the "Grotto." This is an exceedingly intricate formation, 8 feet in height and 90 in circumference. It is hollowed into fantastic arches, with pillars and walls of almost indescribable variety. This geyser plays to the height of 60 feet several times during twenty-four hours. The water as it issues from its numerous apertures has a very striking and picturesque effect. Near the "Grotto" is a large crater, elevated 4 feet above the surface of the hill, having a rough-shaped opening, measuring 2 by 10½ feet. Two hundred yards farther up are two very fine, large geysers, between which and the "Grotto" are two boiling springs. Proceeding a hundred and fifty yards farther, and passing two hot springs, a remarkable group of geysers is discovered. One of these has a large crater, 5 feet in diameter, shaped something like the base of a horn, one side broken down, the highest point being 15 feet above the mound on which it stands. This proved to be a tremendous geyser, and has been called the "Giant." It throws a column of water the size of the opening to the measured altitude of 130 feet, and continues the display for an hour and a half. The amount of water discharged was immense—about equal in quantity to that in the river—the volume of which during the eruption was doubled. But one eruption of this geyser was observed; its periodic times were not, therefore, determined. Another large crater close by has several orifices, and, with ten small jets surrounding it, formed, probably, one connected system. The hill built up by this group covers an acre of ground, and is 30 feet in height. Five hundred yards to the right, and partially concealed by an intervening growth of pines, stands a cone of white rock 40 feet high, which sends forth puffs of steam from a small orifice at its apex. It has probably been a splendid geyser, but now nearly extinct.

The deposits constantly forming at the mouth of the craters must eventually close the opening, necessitating the discharge of the water at some other point, and the geyser then becomes either a warm spring or a steam fountain.

From the cone a valley radiates westward, in which a number of interesting springs are found, one having a beautiful curbing of rock, built up in delicate scollops of a perfect pattern. Another has a basin

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15 feet deep, its sides covered with obsidian pebbles, while a third has its cavity extending beneath the surface of the ground in the form of a cavern. In the timber between the latter springs and the river are found numerous evidences of extinct geysers. The rock is of the same formation, and broken here and there into sharp ravines and fissures, from whence steam and heated gases are constantly issuing. Two hundred yards above the "Giant," and near the river bank, is found a fine hot spring of deep water, 15 by 25 feet in diameter. Between the latter and the river are six small steam jets, with bubbling water beneath. Immediately opposite, on the east bank, is a broad plateau containing five large and small springs, and two boiling springs, one of the latter 40 feet in length. This throws a fountain from one end to the height of 60 feet, at irregular intervals, for the space of ten minutes. Just above the latter, on the edge of the river's bank, are three minute springs, furnishing pretty rills a few inches wide, rippling in tiny cascades through tinted channels down to the river, some 5 or 6 feet below. A hundred and fifty yards west of this are seven hot springs, from 10 to 20 feet across. In the river at this point is a small island, 100 feet in length, with a few pine trees at either end. Between the foot of the mountain and the river the east plateau widens out to 600 yards. Near the large bend in the river, on this plateau, sheltered by a small grove of pine, our camp was located. To the east is situated a very large blue spring, deep and clear, and in the vicinity are found numerous small holes, some bubbling, many discharging steam, and others quiescent. At the base of the mountain, farther south, is situated the "Comet" geyser, which gave us the grand display soon after reaching the basin. The crater of this geyser is very beautiful, though but slightly elevated above the general slope of the plateau; it might easily be overlooked, should it not happen to play during the visit of an examining party. There are three openings, all of which are apparently connected with the reservoir below. One, a very small aperture, emits puffs of steam similar to the exhaust-pipe of a steam-engine. The large one, in the center, 6 feet across, boils violently during an explosion, but does not throw water to a great height.

The third opening is the geyser proper, from which a towering column ascends to the astonishing height of 200 feet. It is 12 by 18 inches in diameter, somewhat narrowed as it descends, and is of great depth, smooth and straight. These cavities are all lined with delicate deposit of rock, beautifully enameled with silica, in appearance as delicate as frost-work, but hard and strong, requiring the assistance of a hammer to detach fragments obtained as specimens. This deposit usually assumes a spherical form, the outer surface being incrusted with minute beads. Just south of this geyser are three large hot springs nearly in the same line. Near the river's bank, on this part of the plateau, are found eight hot or boiling springs, differing in temperature and appearance. One of these occupies the extreme point of a projecting promontory, and is in a state of constant ebullition. It deposits a saffron-colored crater 6 feet in diameter, of rare intricacy and beauty. A small one close by, 6 inches across, bears a strong resemblance to a shell. Opposite the latter is a small pearly-gray spring, 4 feet in diameter. Above the promontory the river flows to the northwest for 300 yards, above which point it again changes its course. The second point is marked by an old water-worn cone, fast crumbling away. Between camp and the large blue spring to the eastward is a curious mud-spring, the surface of which is 4 feet below the ground. It is 4 by 6 feet in diameter. The mud is a fine variety of blue clay, boiling-hot. A

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curious system of steam jets issues from the marshy ground just beyond. Directly opposite this and across the river is a violent little boiler, constantly shooting up water to the height of from 3 to 6 feet. Between the two angles of the river, deep, wide channels are being worn in the surface of the rock by streams of hot water flowing from the "Comet" geyser above. The second angle is also a promontory, and contains two geysers near its extreme point; also two large boiling springs, having saffron-colored curbs, rising several inches above the surrounding rocks.

Covering an acre and a half between the "Comet" and the river is a system of fifteen geysers and eight hot springs, varying from 6 inches to 6 feet in diameter; one of which is usually in action, there being scarcely a moment when all are quiet. Two or three of them are very beautiful fountains, with perfect basins of pure white rock, almost as fine as alabaster, while graceful jets of water shoot from their centers, 20 to 60 feet in height. A yellow stream from one flows through a golden-colored channel, from its orifice to the river. Exactly opposite the second promonotory a small cone, 5 feet high and 6 feet in diameter, emits a steady flow of steam. Across the river, and 10 feet from its edge, an active geyser is seen, its crater 3 feet by 6 at the surface, and lined with a saffron-colored deposit. One hundred and fifty yards west of this spring, situated upon the crest of a hill, 40 feet above the river, is located the largest and most imposing crater in the basin. Its resemblance to a ruined castle or tower is wonderfully striking. In ascending this hill to the castle-crater the surface of the rock is found to be much broken, crumbling away and worn into channels by the water flowing from the geyser during its periods of action. The base of the castle-crater, on the east side, is 20 feet above the slope of the hill, and, on the west, it is even with it. It is 325 feet in circumference, and composed of partially disintegrated strata of calcareous rock.

The turret on the tower is 125 feet in circumference, and rises 20 feet above the base. Broken and crumbling masses of rock at the top give a good idea of the battlement turret. The whole structure is graceful in its proportions and details, resembling an old castle somewhat dilapidated. Even the appearance of port-holes is given by small apertures at several points in the turret and base. This geyser has frequent periods of eruption, throwing off a large quantity of steam. The discharge of water is not great, being but a small stream rising to the height of about 60 feet.

At the base is another crater, 8 feet across, having a probable connection with the main vent, and serving to decrease its force. Another small jet is found about 10 feet distant. Fifty yards east of the castle-crater is a beautiful deep spring of very hot water, of great depth, having a raised and scolloped rim a few inches in height, and 20 feet in diameter. This cavity contains perfectly transparent water, though of a blue color, and appears to be a hundred feet in depth. A sounding-line was found to descend 45 feet. Several small steam vents are found near this spring. To the eastward, and lying between the castle and the extreme end of the valley, the ground is swampy and incloses a lake nearly 75 yards in length. The plateau on the eastern side of the river rapidly converges to a point between the river and the timbered hill-side. Here a small stream comes in, fed from a large spring in the mountain-side a half mile to the east. Crossing the stream, another large geyser system is found, and consists of a hill 50 feet high, deposited from the waters of four geysers, situated close together upon its conical apex. These craters are elevated a few feet above the general surface of the

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crest, and are in a constant state of ebullition, sending forth clouds of steam, and, occasionally, jets of boiling water. One hundred yards to the south is a small hill, containing but one crater at its summit, very irregular and intricate, and leading to an immense cavern beneath the hill. The waters below are quiet. This spring has probably undergone a change from a geyser to a simple hot spring. In time the dome above will crumble and fall in, revealing one of those deep-blue hot springs so numerous in the geyser basins.

Between the two large hills are three small active hot springs, or geysers, from 1 to 3 feet in diameter. Fifty yards beyond bubble and sputter five or six others of about the same magnitude. In this part of the basin new springs are apparently forming; the crust is thin and brittle, rendering investigation somewhat difficult. Here is a large spring of very irregular shape, about 60 feet in diameter, with a thin crust extending several feet over its edge. Passing east and leaving the river 200 yards to the right, several small bubbling springs are found, while upon the crest of the next hillock, 150 yards distant from the group of four geysers called the Chimneys, is another dead geyser, having a high dome and crater, which covers a quiet spring below. Continuing east, over a thin treacherous crust, a fine boiling spring is found on the left, and on the crest of another elevation; fifty yards farther is an active boiler, 6 by 10 feet across, with a curbing 1 foot high and 3 feet thick built around it. On the same hill, and forming with this geyser the angle of a triangle, are two other deep springs, with craters, one 5 by 12 feet, the other 20 by 30 feet. One of these three is the Giantess, described by Lieutenant Doane as the most astonishing geyser in the basin. It did not play during either of the three days my party was in the valley, although it may have done so in the night. I am almost certain it played the last night of my stay, as I was awakened by the eruption of the "Comet," and heard, during its action, heavy concussions accompanied by vast bodies of steam rising from some point in its direction. Although the rock about this spring shows none of the bead-like deposit that is usually found at the geyser craters, yet from deep and wide channels reaching off to the river it may be inferred that heavy streams must at times flow down its surface. Eighty yards east of this group is a deep spring, 6 by 8 feet at the opening, filling a rocky cone 20 feet high and 400 feet in circumference. This has been a violent geyser, but seems to be so no longer. The cavity beneath is very wide, extending in all directions. The covering is of rock, a thin surface, in the form of a dome. There are a great many other springs in this part of the valley, a description of which would be nearly a repetition of what I have said regarding others. No two, however, are exactly alike. One large spring has a natural bridge across it in the center, the rock on either side having broken through.

The banks of the river here are steep and high, and have been elevated by the deposits from several springs still flowing, the water from which trickles down the sides in pretty rills of variegated colors. Upon the opposite, or western, side of the river, some three hundred yards from its bank, stands one of the most interesting craters of the entire basin. This magnificent geyser is the last of the system on leaving the valley to the south, and is situated upon a high eminence overlooking nearly its whole extent. The hill has been built up nearly a hundred feet above the river. The crater is a wonder of beautiful formation, rising by successive steps, or terraces, from its base, 480 feet in circumference, to a central apex 18 feet higher, where a huge fissure in the rock, 2 feet by 7, allows the escape of steam and hot water in a jet of grand

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and beautiful proportions. The formation of the surface of the upper part of the hill is a net-work of beads deposited upon curved surfaces of intricate design and beautiful coloring. The lace-maker might here find designs for his most exquisite fabrics in the delicate tracing formed round the edges of numerous pools of hot water, renewed every fifty minutes by the action of the fountain. These little pools are but a few inches in depth, are of various sizes, and lined with delicate gray on saffron-tinted porcelain. Around their edges are wrought shell-shaped scollops, which project over the water, having usually a contrasting color with the lining of the cells beneath. This deposit, so delicate and frail in appearance, is really as hard and strong as marble, and can be walked upon without injury. The opening of the crater is also very beautiful, formed of spherical masses of beads cemented together, and having the color of ashes of roses. These beautiful incrustations, from 12 inches to 4 feet in diameter, half way surround the crater, presenting a very beautiful aspect. The continuation of the aperture may be traced for 20 yards along the crest of the ridge, eastward, although now almost entirely closed up. Between its periods of action the crater remains empty for some time, but emits quantities of steam, with a rumbling and hissing sound. Just before the display occurs the water rises in the crater, a few convulsive gushes of water are thrown out, when, with an exhibition of mighty power, a column of water the size of the orifice majestically rises to the height of 138 feet. I obtained this measurement during one of its periods of action, though perhaps not its highest. The display lasts for five or six minutes, when the column becomes gradually shorter until it sinks entirely away, leaving a flood of hot water flowing down the hill-side to the river. Near by are two extinct geysers, their cones dilapidated and decaying under the influences of the climate, being no longer renewed by the hot-water deposits; one is entirely dead, while the other still emits some traces of steam from a small aperture at its apex. These cones are 250 feet in circumference and 10 feet high. Looking down the valley to the west, from the crater of "Old Faithful," the view is superbly beautiful, and covers nearly the whole area of the geyser basin, with its thousand steam-jets and graceful fountains scattered so lavishly along both sides of the river, and surrounded with high inclosing hills clothed with rich foliage. No other locality, I think, can be found which combines so many attractions, both of climate and scenery. To the southward is another small valley, through which flows a stream one-half as large as the Fire-hole River, and which it joins two miles below. In this valley are also found numerous hot springs. These are not so remarkable as those already described. Among the most noticeable is a group of eight beautiful springs inclosed in a single rim of scolloped work 140 feet in length. The interior of this basin is lined with a rose-colored deposit. They are found upon the crest of an eminence, the sides of which have become incrusted with rocky deposits in all directions, and extending off into the adjacent forest, whose dead and withered trees bear evidence of the deadly effect of the hot water which has flowed among them.

Lieutenant Doane, from Fort Ellis, overtook my party while in this valley, bringing orders for the return of the general escort, except the six men previously detailed to accompany me, and six others, with Lieutenant Doane in command, who were to remain with Dr. Hayden's party. As we had seen no signs of Indians, this escort was considered quite sufficient. I had remained a day longer in this basin than I had at first intended, hoping to again witness a display of the Comet geyser and to obtain a photograph of this wonder, and also its exact height. I was

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disappointed, however, as the periods of action, after the first, occurred in the night-time. "Old Faithful" and the "Giant" were both measured and photographed while in action. By comparing these with the "Comet" the height of the latter can be approximately estimated, and was, undoubtedly, 200 feet.

On the morning of the 8th I resumed the journey up the valley of the Firehole River, intending to reach the Yellowstone Lake and join Dr. Hayden, who had started the day before. The route above the geyser basin soon became very rough; the banks of the river converged to a cañon whose sides were nearly precipitous, and covered with a dense growth of pine springing from among masses of rock. As we were leaving the valley "Old Faithful" gave us a splendid display by way of a parting salute. We followed the eastern bank of the river, as it seemed less densely wooded, for three miles along the edge of a steep, rocky, and entangled cañon. We now came upon two lovely cascades flowing through a wild cut in the mountain. From a projecting rock Mr. Hine obtained a view of this beautiful gorge and cataract. The country gradually becomes elevated as we advance, and thickly timbered with pine and spruce, intersected with mountain streams of pure cold water. About mid-day we passed a pretty little lake, 500 yards long and 150 yarrds wide, surrounded with high overhanging hills, their wooded slopes extending down to the water's edge. We found game and Indian trails during a part of the way, but as they usually bore too much to the westward we had to select our route across the country by the compass alone. At one time we ascended the back-bone of a sharp ridge, covered with small obsidian pebbles. From the crest of this ridge a magnificent view of the surrounding country was obtained. The summit was 9,500 feet above the sea, and 800 feet above the valley below. Into the valley beyond we now descended, and soon reached the shore of a lake, probably the Madison, some six miles in length by four in width. We followed the stony and narrow beach about two miles, as far as it afforded a practicable footing for the animals. The rocky mountain-side now coming quite down into the lake itself, necessitated our leaving the shore and ascending the mountain to the eastward. After severe climbing, the height was finally gained, and proved to be of about the same elevation as the ridge crossed just before entering the lake valley. After a tedious and weary march, or rather scramble, through thick forests, over rocky ridges and swampy ravines, our course usually to the eastward, we finally reached a more open valley, leading toward the lake. Upon following this for five miles we were gladdened by a glimpse of the lake through an opening between the hills. Night-fall now approaching, the sight of the lake was very grateful. Pushing on with renewed energy we soon heard two shots, somewhat to the left of our route. We changed our course to that direction, and, crossing a spur of hills, came out at Dr. Hayden's camp, near a group of warm springs on the Yellowstone Lake. We had traveled twenty-five miles in the mountains, probably ten miles farther than the direct distance. Here we found some letters, brought by Lieutenant Doane from Fort Ellis.

August 9.—I sent one of the packers and a member of my escort back to Bottler's Ranch this morning, with three pack-mules, for the remainder of our provisions left there on our way up. These men are to return by the eastern shore and meet me in the Upper Valley of the Yellowstone, south of the lake. We are camped at the lake's southwest angle, near a large system of warm springs, and find an abundance of trout in the lake, which, like those previously taken in its waters, contain large white worms, rendering them unfit for eating. The hot

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springs here cover an area of forty or fifty acres, and extend 400 yards along the lake shore. They are similar in appearance to those heretofore described, though, in point of magnitude and number, generally inferior to those found in the Firehole basin. Their waters contain salts of iron and silica. One large spring, with an opening 5 feet by 7, is seen beneath the surface of the lake, near the shore, affording an opportunity for warm baths, which some of the party enjoyed. A small boiling spring near the shore is remarkable in having a bar across its opening, dividing the aperture into four equal parts. This arrangement served as a convenient clothes-boiler; the soiled articles being carried under the bar on one side, would come out washed at the other. One hundred yards back from the lake is an exceedingly interesting and intricate system of mud-springs, similar to those found in the Firehole basin. There are twelve or more craters, formed from the deposit of mud, varying in color from that of cream to light pink, the consistency of which is about that of soft putty. On exposure to the air the clay soon becomes as hard as chalk. It seems to be nearly pure alumina, containing small crystals of silver. Besides the active springs, there are found numerous hot-mud pools. There is great variety in the color and temperature of the warm springs forming the same group. This is general in all systems. The iron springs often deposit a reddish-brown substance, in flat sheets, floating on the water, and are generally less warm than the clear blue ones. The lake shore opposite the springs is composed of calcareous rock, brittle and easily acted upon by the waves, which have worn out deep caverns into which the rock is constantly crumbling. Few of the springs in this valley are now boiling, and no geysers are seen, though, from the appearance of several cones, I am led to believe that a number existed here at some previous time. The morning was rainy and clouds prevented astronomical observations at noon. Soon after the weather became clear, and I decided to move camp across the next peninsula and reach before night the rim of the lake beyond. Following the beach three and a half miles and fording two small inlets, the water of which reached the sides of the animals, we left the lake and struck across to the southeast through the forest, finding the timber quite open. We encountered two parallel ridges, between which was a system of small lily-ponds very difficult to cross. They are probably connected with a long, narrow lake still further toward the end of the peninsula. Near these ponds I found Dr. Hayden's trail, who left the previous camp early in the day. The country now became much rougher and obstructed with fallen timber. The slope leading to the lake on the opposite side of the peninsula was found to be very abrupt and the descent somewhat difficult. It was accomplished in safety, and we found ourselves in a charming valley at the head of a sharp arm of the lake, several miles in length, and bounded by high, rocky bluffs on either side, the one beyond rising in a yellow volcanic ridge, fifteen hundred feet above the valley, the upper portion to the north being a sheer precipice.

August 10.—The weather last night was intensely cold, the mercury falling to 26°. The sun coming up bright and warm soon rendered the temperature agreeable. Dr. Hayden and I decided to separate here for a few days, he to take the line of the lake shore, while I purposed moving farther to the west, then following a course fifteen or twenty miles south of the lake, to meet him in the valley of the Upper Yellowstone.

To obtain a view of the country I was about to investigate, I determined to ascend the Yellow Mountain, towering immediately above our

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heads. Leaving Captain Heap to move the train in a southwesterly direction up the valley, and with directions to camp on the shore of a small lake supposed to lie about ten miles away in that direction, I, in company with Mr. Wood, set out to ascend the Yellow Ridge. The attempt was made from the north, and proved laborious, owing to the broken nature of the surface of the mountain, and the thick timber growing upon its lower slopes. It required two hours of tedious climbing to reach the summit, which was found to be 1,500 feet above the lake. A fine view, of many miles in extent, to the north and west, was obtained. This mountain forms a portion of one of several promontories jutting out into the lake. The great basin of the Yellowstone Lake lay spread out before me. Several other lakes, three or four miles in diameter, were observed to the west and southwest. There were four of these in sight from this mountain.

I now formed the opinion, which subsequent investigation strengthened, that all these small lakes are tributary to the Snake River, which drains the territory lying southwest of the Yellowstone Lake nearly up to its verge. To the southwest is a very conspicuous mountain, a sharp, bold peak, rising far above all others in its vicinity, its sides whitened with numerous fields of snow, while immediately at its base lies one of the pretty lakes just mentioned. The Yellowstone Lake, with its many indentations and its several islands, was spread out at my feet. The lofty volcanic range of mountains bordering its eastern shore rose almost from its waters, while the valley of the river stretched far away to the north, disappearing behind the "Elephant's Back," forty miles distant. Immediately beneath the mountain was the long narrow arm of the lake, at whose extreme point we had camped the night before, while just beyond lay the broad peninsula which we had so recently crossed; its two ridges and the inclosed lake and ponds were plainly visible. The descent to the southwest was difficult, over masses and fragments of volcanic rock, sharp and in some places treacherous to the tread, greatly demoralizing the horses, which were of course led and sometimes driven down the worst places. Before reaching the trail of the party we encountered, in the valley below, dense masses of fallen timber. It was near this valley, last year, that Mr. Everts became bewildered on losing his horse, and wandered for thirty-eight days in the great basin before being picked up, subsisting upon roots and insects. The trail, after it was found, was not very plain, being so greatly scattered in some places that it was almost impossible to trace it. It led over a low divide, separating a small stream upon which we had camped, and which flows into the Yellowstone Lake, from the valley, descending towards the south, and whose waters flow into the Snake River. This valley eventually joins another coming in from the northwest, through which flows a warm creek supplied from a large group of springs along its borders. This stream is 20 feet across, 18 inches in depth, and empties into the small lake at the base of the high snow-covered mountain seen in the morning. The lake is about five miles in length and three in breadth; and from its shape is called "Heart Lake." Here I found the remainder of my party except Mr. Hine the photographer, and one enlisted man. These two had gone back upon the trail of the previous day to find the tripod of the camera, which was missed on arriving in camp.

August 11.—Mr. Hine did not come in during the night. I fear that he was unable to follow the trail and has therefore returned to the lake. I directed one of the best men of the party to go back there and show him the way to this camp. Taking Mr. Prout with me, I climbed

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the mountain near whose base we were encamped. Just at the foot of this mountain, near the lake shore, are four or five boiling springs, one of which is a geyser of considerable importance, throwing jets of water, at frequent intervals, to the height of 15 feet. The mountain is well timbered about half way to its top, the remaining portion of its slopes being bare, broken masses of rock, in many places rising in vertical walls of several hundred feet. We succeeded in taking our horses 1,600 feet above the lake; then leaving them at the base of a nearly precipitous ascent, several hundred feet in height, climbed to the summit without their assistance. Soon after leaving the horses I was obliged to abandon my carbine, the steepness of the acclivity requiring the aid of both hands. The rock of which this part of the mountain is composed was constantly disintegrating and sliding away in avalanches to the valley below. Immense fields of snow filled the gorges of the mountain, from which flowed icy-cold streams in torrents through the lower ravines. In reaching the summit, which was 3,000 feet above our camp, a wide stretch of country was visible in every direction. This mountain occupies about the center of the great basin. On the opposite side of the crest is a line of peaks, forming with this one nearly a circle round an immense conical valley, having the appearance of an extinct volcano.

The most striking object seen from this point of observation was the Teton range of mountains to the southwest, about sixty miles distant. This range rises high above the broad extent of intermediate country, which is drained by the numerous tributaries of the Snake and the Madison, and extends southward in an almost unbroken wall of steep and rocky cliffs, terminating in three sharp spires, so tall and slender that one is reminded of the mast of a ship. To the north the Yellowstone Lake, the mountain ascended yesterday, and the valley at its foot, were all distinctly visible. The outlets of the numerous small lakes in this portion of the great basin seemed to flow to the southward into the Snake River. The geology of this region is volcanic.

I gathered several specimens of rocks from this peak to take back with me. The western slope of this mountain is wooded with a scraggy growth of dwarf pines, bent nearly to the ground by the force of the west winds, and extending up the slope to near the crest, terminate in a line exactly parallel therewith. I passed westward along the connecting ridge to the nearest adjacent peak, where additional observations were taken. A fierce storm was now gathering among the peaks of the Tetons, which would probably soon cross the valley in this direction. I therefore determined to return to camp, descending obliquely across the face of the mountain, over immense tracts of snow, lying in some instances 1,500 feet below the summit. These snow-fields do not probably entirely disappear during the summer, and are replenished again early in September. This mountain I have named Mount Sheridan.

Aner, the man sent in quest of Mr. Hine and private Lemans, returned without finding any traces of them. I was now a good deal alarmed for their safety, and determined to dispatch the whole available party early in the morning in search of them. The night came on wet and gloomy, an unpleasant prospect for men lost in the forest.

August 12.—After a stormy night, the morning proved wet, cold, and dreary, with torrents of rain still falling. The day was spent in an organized search for the two lost members of our party. Captain Heap, with two men, went back upon the trail to the old camp, with directions to follow their tracks, if possible, until they came up with the men. With

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two others I took a northwesterly course across the country, hoping to find their trail, on the supposition that they had gone to one of the lakes in that direction. I followed the valley of the warm creek flowing into the lake near our camp. This stream has a rapid descent for two miles, and is fed by hundreds of hot and boiling springs of the same general character as those previously described.

I saw some traces of sulphur, and also indications of geysers, though none were playing. Through the day we had cold and sleety rains with occasional squalls of snow or hail. Continuing round the mountain to the lake lying at the foot of its westerly slope, I examined the beach carefully for signs of the lost people, but found none. This lake is about four miles in length, north and south, and two in breadth; is pear-shaped, with an outlet at its southern extremity. After continuing the search until near night, without finding any traces whatever of the lost men, it became evident that they could not have wandered so far away from the previous camp, and that the other party would probably find them. This supposition proved correct, as upon returning to the camp I was greatly relieved to find the whole party assembled again; the lost men having been recovered by Captain Heap's party at the other camp, to which they had just returned, after wandering two days in the woods. They had suffered very little, having killed a deer the second morning, which supplied their immediate necessities.

The following four days were occupied in making a circuit from this point around to the valley of the Upper Yellowstone. During this journey the route lay entirely among the various tributaries of Snake River. The ridges were invariably timbered, except the highest peaks, which were bare and rocky. The valleys, in many places, spread out into fine meadows, but were often contracted to narrow cañons, with steep and rocky walls, rendering their exploration difficult and often impossible. The first day but eight miles were made and our camp located at the confluence of two fine branches of Snake River, their united currents flowing to the southwest. This was a trout stream, the fish being very excellent, though shy and difficult to catch.

A broad swampy flat, covered with willows, extends across the angle formed by the two streams, with very little good grazing. The next day we followed down the stream to the southwest for about three miles, to its junction with another branch joining it from the east. We then followed up the valley of the latter, which led in the direction of a prominent mountain, from whose summit I obtained an extensive view of the country far to the eastward. To the north of this mountain lay a sharp ravine, from which ran the branch of Snake River which we had left that morning, and flowing nearly due west at this point. Farther up, to the eastward, the valley of the stream widened out into a beautiful meadow, which point I proposed reaching that afternoon. While I was making these observations, however, the train passed directly across the ridge into the valley below, where it went into camp for the night. This was a mistake, by which I lost the trail and nearly cost me the unpleasant experience of spending a night alone on the mountain, for, upon descending from the summit, and after searching for the trail in the direction I supposed the train had taken, and finding no traces of it, I was beginning to realize that either the train or I had become lost. Just then I observed a light smoke curling upward from the deep ravine three miles below. This served to guide me to the camp.

While upon the summit of the mountain, which I named Mount Hancock, I enjoyed an unparalleled view of a vast extent of country, bounded by the Gallatin Mountains and "Elephant's Back" on the

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north, the Yellowstone range on the east, the Wind River range on south, and the Tetons on the west. Thus the whole of the great basin was in view from the same point. The summit of the mountain, which is 10,400 feet above the sea, is composed of large masses of lava, as sharp as though just broken, and showing no signs of disintegration.

From our camp, at the bottom of the ravine, we proceeded up the narrow valley of the creek upon the following morning, finding the trail exceedingly rough, winding over projecting mountain-spurs and frequently disappearing in the forests. We were often obliged to follow low the rugged bed of the stream at places where the nearly vertical walls of the cañon were inaccessible. The bed-rock of this stream is fine gray sandstone, and resembles the Ohio building-stone. The stream is one of the principal branches of Snake River, has a rapid current, and is subject to severe freshets. At this season it was about 200 feet broad, and generally about 12 inches deep. The banks are from 1,000 to 1,500 feet in height and densely wooded, principally with spruce and pine. Traces of bituminous coal were found along this stream. Six miles of rough traveling brought us to a much higher elevation, where the ravine widened out into a fine valley, the same that I had seen from the top of the mountain the previous day.

From the ridge upon the left I obtained a view of the Yellowstone Lake. This ridge seemed to be the divide between the waters of the Yellowstone and those of the Snake. A small pond which I observed upon the ridge, when full to overflowing, would probably furnish water to both rivers. This ridge is about 1,500 feet above the lake and twelve miles distant to its nearest point. A column of smoke was observed several miles to the northeast arising from burning forests, showing the whereabouts of Dr. Hayden's party.

The animals of my train, particularly the horses, were now becoming a good deal worn, showing signs of breaking down, while the mules were severely afflicted with saddle-galls. The condition of the animals made short daily marches necessary, though the grass was generally good and water abundant. Continuing eastward we crossed some very fine valleys on the 16th, and began the descent of the mountain range separating the waters of the Snake from those of the Upper Yellowstone. This range, upon its lower slopes, is thickly timbered, though by following the crests of radiating ridges less timber was encountered than in the ravine. Glimpses of the Tetons were observed to the southwest from time to time, though until the crest of the ridge was reached but little of the surrounding country could be examined, owing to the intervening timber. On reaching the summit, however, some 1,100 feet above the last camp, the view in all directions was grander and more impressive than any I had before seen. I was completely surrounded with wild mountains, whose sides were precipitous rocks 1,500 to 2,000 feet in height. The valleys were cañons. The summits of the mountains spread out into rolling prairies in many places, bearing grass and flowers. Small lakes were seen at frequent intervals, their waters supplied from immense fields of snow, which undoubtedly remain during the entire summer. Signs of game abound, among which were found tracks of the grizzly and the black bear, mountain-sheep, elk, and deer.

Descending the valley to the east we found a small cold stream flowing northeast, which joins the Upper Yellowstone a few miles below. Here we went into camp, and with Mr. Prout I ascended the opposite mountain on foot. This proved to be a spur from a vast plateau reaching back to the south, between two branches of the Upper Yellowstone. From this plateau the Teton range to the southwest was distinctly

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visible, also a high basaltic wall on the south and east. To the northwest a distant view of the Yellowstone Lake was obtained, through a gap in the mountains. To the northeast stood a remarkable tower, crowning the crest of a very high mountain and bearing a striking resemblance to a castle. The valley to the north is a broad open plain, nearly level with the Yellowstone River, winding among masses of dense willows. A small sheet of water, which is called Lake Bridjer on the old maps, was seen in this valley. Returning to the camp across the plateau we encountered a large grizzly bear and cub. Not being armed or mounted we made a safe detour of the monster, and returned to camp.

On the 17th we moved down the valley, over a swampy and difficult country. The stream rapidly descends over a rocky bed, and finally plunges through a cañon, by which it enters the valley of the main river below. Passing to the left of this cañon, and descending a steep but thickly wooded terrace, we entered the valley of the Upper Yellowstone. This valley is nearly level, surrounded by conglomerate rock, so worn by the elements as to give them the appearance of basaltic formation. From this point to the Yellowstone Lake the distance is about eighteen miles, the valley being two and a half to three miles in breadth. The river here is, however, half as large as the Yellowstone below the lake, and is formed by the junction of five streams, which unite their waters near this point.

This part of the valley I named Five Forks. Between these streams are radiating mountain spurs rising 2,000 feet above the valley, adorned with upright columns and projecting terraces of great architectural beauty. Crossing the valley are several broad trails, which, it is said, were formerly used by the Indians in passing from the head-waters of Clark's Fork, on the Stinking River, to the valley of Snake River. It was my intention to have explored at least the principal branch of the Upper Yellowstone as far as practicable, but the condition of the animals was now such that I feared they could do little more than make the return march to Fort Ellis. Our provisions were just exhausted, but the arrival at this point of fresh supplies, sent for from the west side of the lake on the 9th instant, relieved my anxiety in that respect. These stores would, however, be no more than sufficient to last us to Fort Ellis, traveling as slowly as the poor condition of the animals rendered necessary.

From observations on the march through these mountains, and from information derived from the packers who accompanied me, I am led to believe that a practicable road possibly a railway can be constructed from the Yellowstone Lake south to Snake River on the direction of the Tetons. The connection, however, of the valley of the Upper Yellowstone with that of the Wind River would be attended with great difficulties. An attempt to follow the Yellowstone to its source, then to cross the lofty range of mountains separating it from the Wind River, would, I think, with pack-animals in good condition, be attended with success; and although no pass through this range in this vicinity has yet been discovered, it is possible that a narrow one may exist. A glance at the map will show a natural route for a railroad, connecting the Pacific lines, by way of Wind River, to the Yellowstone, were it not for the difficulties to be met at this one point.

The 18th and 19th were passed in marching from the valley of Five Forks down the Upper Yellowstone to its mouth at the lake. This valley becomes wider as we descend, and continues nearly level, the river winding from side to side among dense willows and swamps, and rendering it necessary in traveling to keep along the base of the mountain

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The hills and the mountain-slopes above are all thickly clothed with timber. The small streams flowing into the river were invariably obstructed with numerous beaver-dams, which form a continuous chain of ponds through the smaller valleys. About half way down the valley I descended the ridge to the east, crowned by the castle-topped summit above mentioned. The walls of this rock were about 400 feet in height, vertical, and in some places inclining outward. I spent an hour trying to find a fissure through which I could ascend to its top, but without success. The elevation of the mountain at the base of the tower is 2,000 feet above the valley. The height of the loftiest pinnacle of the tower is probably 10,500 feet above the sea. The rock is composed, for a distance of 20 feet above its base, of conglomerate, the same as the material of the ridge below, while farther above are strata of fine hard sandstone, the extreme top being of lava. In the east side were two large caverns with arches supported by a pier of fine proportions. A rain-storm now coming on, I descended the mountain (this mountain was named Mount Humphreys) and encountered a small lake on the way. The storm increased, rendering the passage through thick undergrowth anything but pleasant. I finally reached camp on the lake-shore just beyond the mouth of the river, thoroughly drenched.

August 20.—We experienced last night the singular sensation of an earthquake. There were two shocks, the first one being quite severe, accompanied by a rumbling and rushing sound. The morning broke clear and bright. I was anxious to overtake the other party, which had already moved northward. I learned from Barouch, who brought up my supplies, that the doctor's party were now probably near the outlet of the lake, twenty miles beyond. As this distance would be a long day's march in the present state of the animals, I concluded to divide it into two marches, and started at 1 o'clock with the intention of moving about eight miles on that day. Leaving the train in Captain Heap's charge, to be conducted along the shore of the lake, I ascended the mountain-slope rising to the east. Upon this slope I found numerous evidences of warm sulphur-springs, though none which were particularly noteworthy. In overtaking the train six miles from camp, I learned that the party were laboring under great excitement regarding Indians, the feeling being that a considerable party were in our vicinity, but were concealed in the forests awaiting a favorable opportunity to attack us. Although I had little apprehension on that score, having seen no evidence of Indians whatever, I deemed it prudent to continue the march along the lake-shore, and make a junction with the other party as soon as possible. This march was made hurriedly. The country was not, however, remarkable, being thickly timbered and rising rapidly from the lake to the mountain range beyond. Several streams, of no great magnitude, rising in the mountain range, were crossed during this day's march. We found the doctor's camp within four miles of the outlet of the lake, situated near a small rocky promontory called "Steamboat Point." This name is derived from a large and violent steam-vent, throwing out a vast volume of steam in heavy and regular concussions.

August 21.—Remained in this camp during the day, allowing the animals to rest after their hard march of the day before. A small party returned upon the trail to recover a mule which had strayed from the train yesterday. In this search they were successful, and returned with the mule toward night. Besides the large steam-vent, which is the distinguishing feature of this locality, there are many smaller ones and several sulphur springs. The rock is of volcanic origin, immense

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masses of which are distributed in wild confusion along the shore. Frequent earthquake-shocks were felt by the party while at this camp. At such times the large steam-vent became more active, sending forth increased masses of steam with the roar of a cataract.

On the 22d I left Dr. Hayden's party continuing their geological investigations at Steamboat Point, and moved down the east bank of the Yellowstone as far as the falls. The course lay along the lake beach for about two miles, upon which I gathered several interesting specimens of mineral. Leaving the beach, we crossed a small prairie to the northwest, and entered a dense wood. Here the fallen timber delayed our march about ten hours. Beyond this we crossed Pelican Creek, a small stream coming in from the northeast. Beyond this stream I found the country more open, with occasional groves and parks of meadow-land. On reaching the bank of the Yellowstone a fine broad trail was found, upon which, through shady avenues of pines, our train traveled without difficulty. About 1 p. m. we arrived opposite the mud-springs and volcano, seen on our route up the river. The volcano was still sending forth its vast columns of steam far above the surrounding hills. Here on this side were several small rills of icy cold water, pouring from the side of the mountain in rapid streams as from a hydrant. On reaching the falls we went into camp on a small grassy plateau, fifty yards from the brink of the upper fall, and immediately above the rapids. Just below the fall I descended to the bottom of the cañon, 200 feet in depth. In this little cañon, just between the upper and lower falls, were caught some very fine specimens of trout. During the night the concussion caused by the falling water reminded me of the earthquakes felt on the lakes a few nights previous.

August 23.—I determined to remain over here to-day for the purpose of exploring the grand cañon below the lower falls. I expected this to be an undertaking of great difficulty, and attended with some danger; but entering a sharp and narrow gorge or fissure in the side of the cañon, immediately below the great fall, I found the descent much easier than was anticipated. It proved to be very steep; but the rock being solid, with projecting angles, there was little danger to a careful climber. A slope of loose and finely broken rock, a hundred feet in height, moist from the falling spray, terminated the descent. Sliding to the bottom of this slope, I stood on the foot of the great fall, 350 feet below its crest, the walls of the cañon rising 700 feet. My first impression on beholding this fall from below was one of disappointment; it did not appear as high as I expected. The fall, however, was grand, and presented a symmetrical and unbroken sheet of white foam, set in dark masses of rock, while rainbows were formed in the spray from almost every point of view. The steep rocks near the falls, constantly wet with rising mist, were covered with vegetation of an intensely green color. The river below runs with the velocity of a torrent, rushing down declivities, spinning round sharp angles, and dashing itself into spray at every turn. The walls of the cañon are composed of soft disintegrating rock, the prominent color being yellow, intermixed with various shades of gray and red. The rocks are constantly crumbling down, leaving steep ridges and sharp pinnacles hundreds of feet in height, standing out from the walls. I found it impossible to follow the bed of the stream, the steep and slippery side affording no footing whatever, and crumbling at the slightest touch. A view of the cañon from any point is very impressive, particularly so from the foot of the great fall. After ascending from the cañon I followed its eastern crest several miles down, finding that the depth increased rapidly, owing to the rising ground on approaching the cut through the "Elephant's Back,"

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and also to the descent of the river, down numerous cascades along its channel. The views at all times were grand and magnificent.

August 24.—We have suffered a few days past from the buffalo gnat, a small fly, which attacks men and horses, causing severe swelling and itching. We encountered them in the greatest numbers near the outlet of the lake, and brought some of them with us to this camp. They are the first insects that have given us serious annoyance.

From our camp at the falls we struck across to the northeast toward the valley of the East Fork, making only nine miles the first day, owing partly to a late start, caused by the straying of several animals just before packing. Our course was along the valley of "Sour Creek," so named from its perceptibly acid taste. The country was at first generally open, though soon after passing a ridge and valley covered with steam jets the hills become more heavily timbered. On reaching a fine valley with cold streams coming in from the southeast, I went into camp for the night, and early on the morning of the 25th resumed the march toward the East Fork, continuing in a northeasterly direction. Very little was known of the intervening country, though it was generally understood that a high mountain range would have to be crossed; that there were deep and rugged ravines, with masses of heavy timber to be passed through. The animals were nearly worn out, and I almost regretted this detour from a straight line to Fort Ellis. We followed up for two miles a branch of the creek on which we had encamped, through groves of spruce, with open parks at intervals. The whole region is filled with signs of warm-spring formation and brimstone basins, with occasional swamps of volcanic mud. On leaving the open valley the wood abounded with game-tracks, several elk and deer being seen just in advance of our train. We now entered a forest of fallen timber, and ascended a high ridge about 800 feet in elevation, thence across a swift stream flowing over a bed of yellow lava.

Beyond the next ridge was found another pretty stream, having a white chalky bottom. Both flow into the grand cañon of the Yellowstone. Steaming sulphur-jets were discovered on the banks of White Creek. We now began the ascent of the mountain-chain, following up the valley of a small cold stream coming in from the east. The banks on either side of this valley are 800 feet in height. This ravine led far up the ridge, where, after climbing a short steep ascent, we found ourselves on the crest of the divide between the Yellowstone and the East Fork, 10,000 feet above the sea and 2,000 feet above the valleys of these rivers. The descent of the valley of the East Fork was over a rolling country, a good deal cut up by ravines and water-courses. The distance from the crest of the ridge to the valley was about six miles, and the difference of elevation 2,300 feet. The last two miles were very steep and rocky, and severely worried the animals. The horse of one of the escort gave out before ascending the crest of the divide, and had to be abandoned. We entered the valley at the junction of two branches of the East Fork, one coming in from the east, the other from the southeast. The valley at the forks of this stream is four miles wide, and is a rolling prairie, with groves of trees and thickets of willows along the river banks. The larger branch forks about three miles up, and still a few miles above breaks into numerous small streams, finding their sources in the high mountain range to the east. Many peaks of this range are distinctly seen from this part of the valley. They are very conspicuous, rising probably more than 12,000 feet above the sea. I expected to have met Dr. Hayden's party in this valley, but saw his train depart down the river just as I descended the mountain. Numer-

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ous bands of antelope were seen skipping over the prairie while we remained in the valley.

August 26.—I had intended sending the train down the valley and across the Yellowstone River to-day, while I would overtake it, after ascending one of the mountain-spurs in this vicinity for observations upon the surrounding country. But as the morning broke dark and rainy, the latter part of my plan was abandoned, and I accompanied the train on its march down the valley. We kept along the foot of the hills, on the southern side of the river, avoiding swamps and stony places nearer the stream. The valley is from two to five miles wide, the soil generally poor, except immediately along the river's banks, where many of its terraces are fertile, and would probably answer well for general farming purposes. The mountains on either side continue down to the Yellowstone Valley, though broken by ravines, through which issue small mountain streams. The largest of these joins the East Fork near its mouth, coming in from the northeast, and is called "Slough Creek." We crossed the Yellowstone upon the bridge noted on my route up the river, and halted near the old camp at Meadow Brook. Here the tents were pitched and we remained over the following day, allowing the animals to obtain food and rest. Two packers crossed the river and returned the next day, bringing with them the carcasses of an elk and deer. We were now provided with fresh meat for the remainder of the journey.

August 28.—We set out upon the return to Fort Ellis by the same trail over which we passed more than a month ago. Ascending the mountain's side, familiar objects met the view at every step. We soon reached the little cañon at the crest of a mountain 1,400 feet above our camp of Meadow Brook. Making a cut-off here, we passed over a hill literally covered with agates, many beautiful specimens of which I gathered as I passed along. Thence across Black-Tail Deer Creek, down the cañon of Gardner's River, and, arriving at the "Soda Mountain," camped at the foot of its eastern slope, in a small ravine containing a spring of cold water. A luxurious bath-tub has been hollowed from the slope of the rock, having both hot and cold water conducted to it, in which I took a delicious bath. My impressions of this mountain of springs, formed a month ago, were not quite realized now; still, it is very beautiful, and should be classed among the first natural curiosities of this region. As we passed down the valley the following day, to the little cañon of the Yellowstone, the trail seemed very easy. The hill-sides are barren, the grass dried up, and the contrast from the luxuriant vegetation of the lake basin was very marked. All the objects were very familiar; the Devil's Slide, its parallel walls extending out a hundred feet beyond the mountain's side, and rising upward 800 feet or more. Further on the trail winds along the river's bank, passes lake "Seven," and descends into the cañon, where we camped on our route up. I passed by this spot and entered the farther valley, hoping that the grass there would be less withered, it being traversed by a mountain stream. We here halted for the night. Another of the horses which had been failing for several days, was abandoned a few miles back, near the "Devil's Slide." Our progress was not rapid on the return, owing to the exhausted condition of the animals, and we could make but twelve or fifteen miles a day. It was fortunate that the route was not extended further, for in that case I should have lost several more horses. The mules endured the march much better, and, had they not suffered from sore backs, caused by too narrow saddles, would have returned in as fine condition as when they started. The horses were too large for such service; ponies would have endured the hardships much better.

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Another day's march brought us to Bottler's Ranch, and in two more we reached Fort Ellis, where we arrived about noon on the 1st of September.

Through the courtesy of Major Forsyth, quartermaster at Fort Ellis, I visited with him the Crow Indian Agency on the Yellowstone, thirty-five miles from Fort Ellis. The entire Crow Nation and a portion of the Nez Percés had just come in to receive their annuities from Major Pease, the agent of these Indians. The agency consists of a large stockade containing several store-houses—quarters for the agent and his assistants, the trader, and interpreter. A school for teaching the Crows has been established under the charge of Mr. Ainsworth. The Crow Nation numbers about three hundred lodges and musters eight or nine hundred warriors. The men are generally fine-looking, tall and straight, many of them six feet in height. The "Iron Bull," one of the most important chiefs, is a good-natured and genial fellow, and was not afraid of having his photograph taken. Several of the others submitted to the ordeal also, but most of them had superstitious ideas against it. We forded the Yellowstone, going to and returning from the agency, at one of the several fords which are found about seven miles above it. These fords are all difficult, the current of the river being very swift and the bottom covered with large boulders. At this season the depth was about three feet at the fords. In high stages of the river a ferry is used.

Immediately after my visit to the Crow Agency I bade good-bye to Fort Ellis, where I had been most kindly received and hospitably entertained by Brevet Colonel and Major E. M. Baker and the other officers of the post.

I left Fort Ellis on the morning of the 6th, taking the stage for Helena. I followed the general course of the West Gallatin for twenty miles to Gallatin City, at the junction of the three forks, viz, the Gallatin, Madison, and Jefferson rivers, which unite at this point and form the Missouri. Beyond, the stage-road passes over a rolling country in a westerly direction, the Missouri appearing in view at several points along the route.

Eighty-five miles beyond the Gallatin I reached Helena, arriving there in the evening. This city, like all mining towns, grew up by accident, and is crowded into a narrow gulch at the foot of the mountains. A fine open country stretches northward to the Missouri River. I remained over here one day and visited the gold mines at Unionville, a few miles farther up the gulch. These mines are in active operation, and, to judge from the amount of treasure carried over the stage-line to Corinne, they must be yielding good returns. Leaving Helena on the 8th, a tedious stage-ride of four days and nights brought me to Corinne, when I immediately took the cars to Chicago, where I arrived on the 15th of September.

REPORT OF CAPTAIN D. P. HEAP.

HEADQUARTERS DEPARTMENT OF DAKOTA,
Saint Paul, Minnesota, January 23, 1872.

CAPTAIN: Agreeably to your request of January 13 I have written a concise account showing generally how the survey of the country explored by us last summer was conducted.

Owing to the fact that everything taken on this reconnaissance had to be transported by pack-animals, we were limited in our choice of surveying and astronomical instruments to those which could most easily be carried and be least likely to get out of order. Our astronom-

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ical instruments were two sextants, an artificial horizon, and two chronometers—one mean-solar and one sidereal.

The instruments for keeping the trail were two prismatic compasses and an odometer-cart, drawn by a horse; it was so narrow it would go wherever a horse could, and consisted of a pair of shafts, a steel axle, and two velocipede wheels; it was light, but strong, and answered the purpose well.

Observations for latitude were taken at every camp if the weather permitted. From Fort Ellis to camp at Meadow Brook, near east fork of the Yellowstone, the same trail was taken both going and returning, thus giving opportunities of correcting errors made the first time going over it.

From camp at Meadow Brook to Yellowstone Lake the trail was on one side of Yellowstone River going and on the other returning, this enabled us to plot the river quite accurately.

At our first camp, on Yellowstone Lake, Mount Sheridan could be seen due (magnetic) south of us. The difference of latitude between this camp and a camp near the foot of Mount Sheridan gave the distance between the two camps. From the top of Mount Sheridan bearings were taken to Yellow Mount, Mount Hancock, Mount Humphreys, camp of August 8 at Hot Springs, and at various prominent points in the lake. From Yellow Mount and mount near Mount Humphreys these same points in the lake were located, and from this latter mountain Mount Hancock could also be seen. The latitude of camp at Steamboat Springs was carefully determined by several observations, and bearings taken to Mount Sheridan and numerous points in the lake. Then there were a large number of well-defined points nearly all around the lake, and the bearings were so taken that their relative positions were mutually interdependent. From thence the general shape of the lake was well defined, important points in it well located, and many of the minor details put in with considerable accuracy.

The trail was kept as carefully as possible, but the ground was so broken, the road so winding, and the country generally so difficult, that many unavoidable errors were made. The latitude obervations were particularly useful in correcting these, as the general direction of the march was north or south, the tract of country explored being included between the one hundred and tenth and one hundred and eleventh meridian of longitude and extending from the forty-fourth nearly to the forty-sixth parallel of latitude. The observations for latitude were generally on Polaris off the meridian or by meridian altitudes of the sun; when possible both kinds of observations were taken at the same camp, the latter being preferred, and as a rule they agreed quite closely. Observations for time were almost always on the sun, occasionally on a star, Arcturus being generally selected. My assistant, Mr. W. H. Wood, and myself each took about the same number of observations during the trip. The trail was kept by Mr. W. H. Wood and Mr. H. G. Prout.

The astronomical computations were made and the work plotted in the field. On my return to this office the computations were re-examined and the work replotted by Mr. Wood and myself.

Inclosed is a sketch showing the principal points and the bearings taken from them as stated above.

Very respectfully, your obedient servant,

D. P. HEAP,
Captain of Engineers.

Captain J. W. BARLOW,
Corps of Engineers, Chicago, Illinois.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 67.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

ACCOMPANYING

A copy of the Counter Case of the United States, presented to the Tribunal of Arbitration, at Geneva, under the provisions of the Treaty of Washington.

APRIL 22, 1872.—Referred to the Committee on Foreign Relations and ordered to be printed.

To the Senate of the United States:

I transmit, for the information of the Senate, a report from the Secretary of State, and the copy of the Counter Case of the United States, in the matter of the claims against Great Britain, as presented to the Board of Arbitration at Geneva, which accompanied it.

U. S. GRANT.

WASHINGTON, *April* 20, 1872.

DEPARTMENT OF STATE,
Washington, April 20, 1872.

The Secretary of State has the honor to lay before the President, for communication to the Senate, a copy of the Counter Case of the United States in support of the claims of the Government and citizens of the United States against the Government of Her Britannic Majesty, as presented to the Tribunal of Arbitration, at Geneva, on the 15th instant.

Respectfully submitted.

HAMILTON FISH.

To the PRESIDENT.

THE COUNTER CASE OF THE UNITED STATES, PRESENTED TO THE TRIBUNAL OF ARBITRATION, AT GENEVA, UNDER THE PROVISIONS OF THE TREATY OF WASHINGTON, APRIL 15, 1872.

The IVth Article of the Treaty of Washington permits each party, within four months after the delivery of the case, to deliver in duplicate to the Arbitrators, and to the agent of the other party, a Counter Case and additional documents, correspondence, and evidence, in reply to the case, documents, correspondence, and evidence presented by the other party.

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Availing themselves of this right, the United States present this as their Counter Case, together with additional documents, correspondence, and evidence, in reply to the case, documents, correspondence, and evidence submitted by Her Majesty's Government.

In laying this Counter Case before the Tribunal of Arbitration, they deem it proper to premise that they do not consider it within the province of this paper to discuss all the propositions within the British case which they regard as justly disputable or requiring argumentative discussion. So far as the positions taken by Her Majesty's Government in its case vary from those which the United States had the honor to lay before the Tribunal in their case, they respectfully refer to that document for an expression of the views which they regard as supported by sound principles of reason and by the acquiescence of other powers, and by the writings of publicists of authority.

So far, too, as contestations of questions of fact are raised between the parties, on their respective cases, and the supporting evidence on either side, a mere renewal of the contestation in the Counter Case would be superfluous. The United States therefore refer to their original case for their views and estimates of the contested matters of fact.

It has seemed to them to be more in accordance with the spirit of the Treaty, and with the convenience of the Tribunal, thus to reserve for their counsel the general analysis and discussion of these matters, so far as they shall prove important in their bearing upon the substantial controversy between the parties in the argument which will be prepared by them for submission under the Vth Article of the Treaty, and in such oral arguments, if any, as the Tribunal may express a wish to hear.

Reserving, therefore, their rights and the freedom of their counsel in these respects, they ask the attention of the Tribunal to the following observations upon some of the main points of difference between the case and other matter submitted on the part of Her Majesty's Government, and those submitted on the part of the United States.

I.

Certain errors of sense, which run through the case of Her Majesty's Government, first claim attention.

1. It is assumed in that case that the rebels of the United States were, by Her Majesty's proclamation of May 3, 1861, invested with some undefined political attributes. But the United States have hitherto understood that Her Majesty's Government merely assumed to regard the persons who resisted the power of the United States as a body of insurrectionists who might be recognized as clothed with belligerent rights at the discretion of neutral powers. They therefore think it right to conclude that the frequent use in the British Case of language implying recognized political attributes in the insurrection is an inadvertence.

2. Her Majesty's Government assume that the reclamations of the United States are to be confined to claims growing out of the acts of the Florida, the Alabama, the Georgia, and the Shenandoah. The claims growing out of the acts of the other vessels named in the American Case are regarded by the United States as also embraced within the terms of the Treaty. They form part of the claims generally known as the "Alabama Claims." They are enumerated in the fourth of a series of five volumes printed by order of the Senate of the United States, which are part of the "documents, correspondence,

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and evidence" submitted with the case of the United States. These volumes, when thus collected and printed, were entitled: "Claims of the United States against Great Britain." It is believed that under that title they were in the library of the Foreign Office at London before Her Majesty's High Commissioners received their instructions. It may also be said, without impropriety, that under the same title they were on the table of the Joint High Commission during the negotiations which preceded the conclusion of the Treaty. The United States, therefore, while re-asserting their construction of the language of the Treaty in this respect, feel that they have the right to ask the Arbitrators to assume that Her Majesty's High Commissioners had notice of, and acquiesced in, that construction.

3. The United States are at a loss to understand why several observations are introduced into the British Case, which apparently aim to limit the operation of the three rules of the Treaty. If, by the principles of construction which are suggested, Her Majesty's Government intend to ask for a modification or change in those rules, the United States cannot too strongly protest against it.

4. It is averred in several places that some of the acts of which the United States complain were committed by American citizens. If these statements are introduced for the purpose of urging this fact as an excuse for the negligence of Her Majesty's officials, or for any other supposed relevant purpose, the United States will ask the Tribunal to take note that the "American citizens" referred to were criminals in the eye of American law, at the time when they were elevated to the rank of recognized belligerents against the United States by the act of Her Majesty's Government, an act in which the United States did not participate, and against which they have never ceased to protest. It would seem, therefore, to be impossible to impute to the United States any consequences of responsibility for the conduct of the persons thus described as "American citizens."

II.

Her Majesty's Government has also stated, in terms, many propositions, some of law, some of fact, some of mixed law and fact.

For the convenience of the Arbitrators the United States call attention to some of the leading points of difference between the two cases, with the reservations heretofore made as to the points not noticed, and as to the rights of counsel.

1. The British Case seems to concede that a belligerent who has wronged a neutral by violating its sovereignty and by forcing it to take part, indirectly, in a war, may, nevertheless, by some subsequent act, (such as commissioning without the jurisdiction of the neutral a vessel of war improperly constructed within its jurisdiction,) deprive the neutral of the right of taking cognizance of the original offense.

The United States suggest that such a right cannot be lost by the mere act of the offending belligerent.

2. It appears to claim for vessels of rebels recognized as belligerents an exemption from national jurisdiction, which should be accorded, if at all, only to vessels of recognized sovereign powers, to which powers political representations can be made in case of violations of neutral sovereignty; and it ignores undoubted prerogatives of the Crown to exclude armed vessels from the national ports.

3. It attempts to limit the operation of the words "due diligence" in a manner inconsistent with principles of law well established on the

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continent of Europe, in the United Kingdom, and in the United States. It sets up as the measure of care a standard which fluctuates with each succeeding government in the circuit of the globe, viz, "such care as governments ordinarily employ in their domestic concerns."

4. If the United States have correctly interpreted its somewhat vague language, on page 167, it asserts that, in a case like the present, a belligerent should be required to show on the part of a neutral, as a foundation for a claim for compensation, an absence of care nearly equivalent to willful negligence. The United States had notice that this point would be pressed by Her Majesty's Government. It had announced that its case would be prepared partly under the direction of an eminent and learned publicist who had vigorously insisted upon it in his public writings on the neutrality of Great Britain in the American struggle. They therefore presented for the consideration of the Arbitrators certain facts exhibiting an unfriendly feeling toward them on the part of individual members of Her Majesty's Government during the contest, which might naturally lead to, and would account for, a want of diligence bordering upon willful negligence. But, while thus anticipating this position of Her Majesty's Government's Case, they did not, and do not, assent to its correctness. They do not conceive that the law of nations tolerates the proposition that belligerents are required to submit, without redress, to the injuries of neutral negligence, till it teaches the extremity suggested.

5. The British Case attempts to narrow the international duties of a government to the exercise of the restraining powers conferred upon it by municipal law.

6. It overlooks the obligation of the neutral to amend its municipal laws, when the powers conferred by such law prove inadequate for the performance of international duties. In this view the many statements in the British Case as to the actual internal distribution of powers in Her Majesty's Government, though interesting, are irrelevant in measuring its external obligations.

7. The British Case proposes that the liability of Great Britain to make indemnity to the United States should be limited to the cases which the United States cannot show, by affirmative proof, that they actively and diligently exerted their naval power to prevent. The United States contend that such a proposed limitation has no just foundation in sound principles of international or other law.

III.

Part II, of the British Case, assumes to give an introductory statement of, (1.) "The events which attended and followed the commencement of the civil war in America;" (2.) "The course pursued by Great Britain in relation to the war;" (3.) The course pursued by "the other maritime powers" in relation thereto. Part III assumes to give a "statement on international rights and duties on the powers which were possessed by Her Britannic Majesty's Government of preventing 'unlawful equipments,' and the manner and circumstances in and under which these powers were exercised during the war."

The United States, with the reservation heretofore made, now call attention only to some of the principal points of difference in this respect between the cases of the two Governments.

1. The United States insists that Her Majesty's Government is politically and historically in error in the assertion on page 6, that the

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contest terminated in 1865 in the complete reconquest of the eleven Confederated States.

2. If it be intended by the statement in page 7, that "in and soon after the month of May, 1861, a number of armed ships were fitted out and sent to sea from ports in the Confederate States," to lead the Arbitrators to suppose that there was any insurgent vessel preying on the commerce of the United States when the Florida, or when the Alabama escaped from Liverpool, the United States cannot too strongly protest that Her Majesty's Government is in error in this respect.

3. The United States have, in their case, called the attention of the Tribunal to the acts of Belgium, Portugal, Russia, and Prussia, which seem to have been overlooked by the authors of the British Case in their enumeration of the acts of the maritime powers. In regard to all the maritime powers the Tribunal will doubtless observe that those which recognized the insurgents as lawful belligerents, did so only after Great Britain, the principal maritime power, had elevated them under the name of the "Confederate States" to this rank, and had thus conferred upon them all the substantial advantages which they could gain from a general recognition by the maritime powers. They will also observe that the other Governments did not recognize the title which the insurgents had taken for themselves. Thus, for example, the proclamation of the Emperor of the French spoke of them as "States which pretend to form a confederation;" the circulars of the Dutch Government spoke of "the doubtful complications in the United States of North America," "the existing disturbances in the United States of America;" and the Brazilian circular expressly states that "the Confederate States have no legal existence."

4. It is stated, on page 22, that "by the United States cruisers the ports and waters of Her Majesty's dominions were resorted to for coaling and other purposes more frequently than by vessels of the Confederate States." If by this it is intended to imply that, having regard to the great disparity of numbers between the vessels of the United States and those of the insurgents, the United States enjoyed to an equal extent with the insurgents the hospitalities of the British ports, or that, without regard to that disparity, those hospitalities were extended with an impartial neutrality to each, the United States emphatically deny it.

5. It is stated, on page 25, that "the acts of which the Government of the United States is understood to complain belong to a class which have not commonly been made the object of prohibitory legislation;" that "in few countries, or in none, according to the information received by Her Britannic Majesty's Government, did the law directly prohibit such acts, or make any definite provision for preventing them at the time when this war began, except in the United States and Great Britain." The information of the United States on this point does not agree with that of Her Majesty's Government. They have the honor to refer the Tribunal to statements concerning the laws of Austria, Belgium, Denmark, France, Italy, the Netherlands, Portugal, Prussia, Spain, and Sweden and Norway, which will be found in the fourth appendix attached to the report of the neutrality laws commissioners. This document will be found at the close of the third volume of the British Appendix, and in the fourth volume of the American evidence, between pages 126 and 168. They also refer to the documents and evidence herewith submitted regarding the laws of several powers in Europe and America for the preservation of their neutrality. It will appear from all this evidence that acts such as those of which the United States complain, have been widely made the subject of positive legislation, and

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that in no country, except Great Britain, so far as the United States are advised, has it been assumed that proceedings under the municipal or local laws are the measure of neutral obligations toward other Governments.

6. On page 25, it is stated, with reference to the steps taken by President Washington, that "the measures adopted by the Executive of the United States to restrain these enterprises [the fitting out of French privateers] proved inadequate." In answer to this, the United States recall to the recollection of the Tribunal that the French minister of that day contended that his Government derived the right to commission privateers from the ports of the United States from the provisions of the Treaty of 1778 between France and the United States—a treaty made at a time when Great Britain was at war with the United States. The repressive measures of President Washington were taken under a sense of the duties of the United States as a neutral under the laws of nations, and in the face of their particular duties under the Treaty, as construed by France. In the memoir of Mr. Abbott, (now Lord Tenterden,) which will be found in the British Appendix, at the end of volume three, it is stated that "the result of the publication of the rules of the 4th of August [which were the measures adopted by the Executive referred to in the British Case] was that the system of privateering was, generally speaking, suppressed, though cases seem to have occurred until the arrival of Mr. Genet's successor, in February, 1794, who disavowed his acts, and recalled the commission he had granted to privateers."

7. The remarks on pages 26, 27, and 28, regarding the manner in which the United States have at different times performed their duties as a neutral nation towards Spain, Portugal, and other powers, are stated to be made without any "intention of Her Majesty's Government to cast any reproach upon the Government or people of the United States." They are, however, apparently introduced for the purpose of inducing the Arbitrators to assume that the United States, at some or all of those times, did fail to use the diligence for the repression of hostile expeditions from their shores which ought to have been exercised, and which is required by the rules of the Treaty of Washington. The United States would regard such an imputation as a reproach, however intended by its authors. They have therefore determined to ask the Arbitrators to examine the further evidence on these points which they have the honor to submit herewith, although they cannot but recognize that the Arbitrators may justly feel that neither party ought to add to their arduous labors by the introduction of statements and evidence wholly foreign to the issues submitted to their decision. The evidence now submitted by the United States regarding the performance of their international duties is voluminous and spreads over a series of years and a variety of incidents. It relates to the contest between Spain and her colonies, to the war between Brazil and the Artigas Government, to struggles of Cubans for independence, to the war between Spain and the South American Republics, and to the Crimean war. In all these contests it became the duty of the United States to preserve their neutrality under difficult circumstances; often when the sympathies of large masses of their people were enlisted in opposition to the national obligations. Her Majesty's Government has thought it right to call in question the efficiency, while admitting the good faith with which the United States performed their duties in these trying circumstances. The evidence now submitted shows conclusively that Her Majesty's Government has been misinformed; that the United States did perform

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their duties as a neutral at those times with a fidelity and activity which, had they been imitated by Great Britain during the insurrection, would have made the present proceedings unnecessary.

8. The United States unite with Her Majesty's Government in its remarks on page 27, calling attention to the fact that the President of the United States, at the request of the Portuguese Government, did, in 1817, recommend Congress to confer upon the Government, not only power to punish offenders, but also power to prevent the commission of the offenses; and that Congress did, in compliance with such request, confer such power in the neutrality acts of 1817 and 1818.

9. The United States are at a loss to understand to what reference is intended by the words on page 28: "It is needless here to refer particularly to more recent instances of vessels fitted out in ports of the United States for expeditions against countries with which the United States were at peace. These instances are well known." Vague insinuations like these, without definite statement, allegation, or proof, furnish no foundation for an answer in the only form in which the Treaty permits the United States to defend themselves.

10. The United States emphatically deny the statement on page 28, that their prohibitory laws have "been infringed by acts much more flagrant than any of those now charged against Great Britain." They feel confident that a fair consideration of the proof which they have offered and of that which they now offer, showing the fidelity with which they have ever performed their international duties, will convince the Arbitrators that they have honestly, strenuously, in good faith, and with due diligence, striven to perform those duties.

11. The United States think that Her Majesty's Government has been incorrectly informed regarding the United States Statute of 1818, commonly known as the Neutrality Act. It is stated on page 29 that the British Act of 1819 is "more stringent, rigorous, and comprehensive than that of the United States." Her Majesty's Government does not say in what respect the superior stringency, rigor, and comprehensiveness of that act is supposed to consist. If the British Act could have been suspended by the act of the Crown, which is supposed to have been the case, it may at least be held to have furnished less permanent and certain remedies than the law of the United States. The United States think that the qualities of stringency, rigor, and comprehensiveness will be found in their law in a superior degree; and they call attention to the following points of comparison: 1. Enlistments of British subjects only are made unlawful by the British Act; the American act, on the contrary, makes all enlistments within the neutral jurisdiction unlawful, except naval enlistments of subjects of the enlisting belligerent, made on the deck of a vessel of the belligerent while within the neutral waters. 2. By executive and judicial construction, the words "equip," "fit out," and "furnish" have received a much broader meaning in America than in Great Britain, as the United States have explained in their case. 3. The tenth and eleventh sections of the American Act, commonly known as the bonding clauses, are admitted not to be in the British Act. And it is also admitted that these clauses are intended to be preventive, not punitive. 4. The eighth section of the United States Act is also omitted in the English Act. This section, the practical operation of which is explained in the case of the United States, is regarded by them as by far the most efficient part of the act for the prevention of violations of neutrality. 5. It may not have escaped the attention of the Arbitrators that Her Majesty's Government has itself furnished evidence of the superiority of the United States Statute

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over the British Act. "I may remark," says Sir Frederick Bruce, the British Minister at Washington, writing to his Government, "that the Government of the United States has considerable advantages in proceeding against vessels under the statute. They have on the spot where the preparations are being made, the district attorney, a legal officer responsible to the Government, to whom the duty of investigation is committed. The libel is in the nature of a proceeding in admiralty *in rem*. It is decided by a judge conversant with international and maritime law, without the intervention of a jury." (Vol. 3, Brit. App., last paper, page 67.—Vol. 4, Am. Evidence, page 162.)

12. Without questioning, in the Counter Case, the correctness of propositions 1, 2, and 3 of English constitutional law, on page 30, the United States think that they are not mistaken when they say that the privilege which a witness is supposed to have of refusing to answer a question is a personal privilege, of which the witness may or may not avail himself. It is not supposed to be one which a court will voluntarily take from him, and enforce against his wishes.

13. In the statements on pages 31 and 32, regarding the supposed duties of the officials of the United States "to keep a watchful eye on whatever might tend to endanger the security or interests of the United States," &c., it is not made quite clear whether Her Majesty's Government regard these as duties of which it had the right to demand performance of these officials, or as duties which they owed to their own government. Although the latter interpretation would seem to be the most reasonable one, there is some ground to suppose that Her Majesty's Government has made the statement in the former sense. Without admitting it in that sense to be just, the United States insist that, even should such an obligation not be disputed, Her Majesty's Government would not thereby be relieved from the duty of an independent, diligent, and vigilant watchfulness, in order to prevent evil-disposed persons from violating its neutrality. Nor would the minister of a belligerent power (as Mr. Adams was in the eye of the English cabinet) be required, after the receipt of official information as to the nature and character of the evidence that must accompany his representations, to make, or complained of for not making, representations of fact to the neutral government, except in the manner in which he had been notified to make them. Thus, (to apply the proposition,) Mr. Adams, being notified by the British Government that, in order to secure official action on a complaint of a contemplated violation of British neutrality by the insurgents, he must furnish proof of the fact sufficient to warrant conviction for a violation of the Foreign Enlistment Act, could not be charged by that government with responsibility for not making representations embodying a lesser degree of proof.

14. The United States do not understand that it is true that "allegations that vessels were being prepared for cruising or carrying on war," were in all cases followed by seizure of the vessels when sufficient *prima facie* evidence of the illegal purpose was furnished. They understand exactly the contrary to have been the case; that until the opinion of the law officers of the Crown, given on the 29th day of July, 1862, (the day of the escape of the Alabama,) all branches of Her Majesty's Government held that it was necessary, not only to establish a preparation for cruising or carrying on war, but also an actual arming of the offending cruiser in a British port, in order to justify seizure, and that this prevailing opinion was afterward sustained in effect by the courts of England in the Alexandra case, which is still the unreversed judicial construction of the act of 1819.

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15. On page 57 is given what purports to be an explanation of the meaning of the words "registry" and "clearance," and of the duties of the officers empowered to register ships, and of the officers of the customs in respect to clearances. The acts of Parliament, prescribing the duties and conferring the powers, are not specially referred to; but the United States understand them to be "the Merchant Shipping Act, 1854," (17 and 18 Vict., cap. 104,) and the "Customs Consolidation Act, 1853," (16 and 17 Vict., cap. 107,) with their several amendments. These acts, in the opinion of the United States, confer more extended powers upon the officers of Her Majesty's Government than is stated in the British Case, and they therefore ask the attention of the Tribunal to the acts themselves, extracts from which are submitted herewith.

IV.

Part IV of the British Case assumes to state certain considerations proper to be kept in view by the Arbitrators in reference to the cases of the Florida, Alabama, Georgia, and Shenandoah.

The United States have already made it clear, both in their case and in this paper, that they regard many of these statements as not "proper to be kept in view by the Arbitrators" in reference to any of these vessels. Without repeating their views on this subject, they confine themselves to calling attention to a great error into which the Arbitrators may be led in consequence of the use of inaccurate or careless language in the closing paragraph of this statement in the British Case.

It is there stated that "claims for the interference of Her Majesty's Government in the case of these and other vessels were based, according to the statement of Mr. Adams, in his letter to Earl Russell dated 9th of October, 1862, on evidence considered by him to apply directly to infringements of the municipal law, and not to anything beyond it."

It is quite possible—perhaps it is not too much to say that it is probable—that the Arbitrators may derive from this statement the impression that all the official representations of Mr. Adams in respect to these four vessels were expressly based on evidence offered by him in support of allegations of infringements of the municipal law. The United States call attention to this, feeling confident that Her Majesty's Government will be anxious to exclude a construction of its language which is so little in accordance with the facts.

V.

Part V of the British Case is entitled, "Statement of facts relative to the Florida." The evidence in support of this part of the case is to be found in volume one of the appendix, between pages 1 and 165, inclusive.

There are few discrepancies in the two accounts of the career of this vessel. The new evidence furnished by Her Majesty's Government sustains and confirms the views of the United States, and attention is called to some instances of this character.

1. It now appears clearly that, before the Florida left Liverpool, the British Government received information from the Government of His Majesty the King of Italy that the pretense that the Florida was constructed for the Italian Government was a fraud.

2. The participation of the legal authorities at Nassau in the conspiracy for the discharge of the Florida, which was charged by the United States, is established by the official reports accompanying the British Case.

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3. Her Majesty's Government introduces, on pages 73–4 of its appendix, evidence which sustains the allegations in the American Case that the Florida was, in outward appearance, a British man-of-war, and that, in such an assumed character, with the British flag flying, she passed the blockading squadron off Mobile, and that her real character was not suspected until too late to stop her. This act was described at the time by the distinguished admiral who witnessed it as only "an apparent want of vigilance."

4. The official report of the governor of Barbadoes of what took place there in February, 1863, shows that there has been an evident mistake on the part of the governor as to the San Jacinto. It also brings home to the governor positive knowledge of the fact that the act which he was committing was a violation of international duty towards the United States.

5. It now appears in clear colors that Bermuda was made a base of hostile operations by the Florida. The commander of that vessel, having coaled, and having been at Barbadoes within less than seventy days, and having then cruised off the port of New York, destroying American vessels, arrived at Bermuda and informed the governor of all these facts. The governor, with a knowledge of them, gave him a hospitable reception, and permitted him to coal and repair. These facts were officially reported to Her Majesty's Government, and were formally approved at the Foreign Office. Until now, the United States have been unable to establish, without the help of presumptions, all the links in the chain of evidence.

6. It is stated in the British Case that "had the vessel been seized by Her Majesty's Government, a court of law would have ordered, and would, indeed, have been bound to order, the immediate restoration of her for want of evidence to support a forfeiture." It is not for the United States to challenge the statements of Her Majesty's Government regarding British municipal law. Their officials sought, during the rebellion, to induce Her Majesty's Government to stop the vessels constructed in Great Britain to cruise against the United States. They did not ask for their forfeiture, they did not object to a restoration to their owners, provided they were not to leave British waters to carry on war against the United States. It is necessary to bring the Tribunal back to this simple proposition, which has been obscured by the irrelevant considerations put forth by Her Majesty's Government.

7. It is scarcely necessary to say that the United States deny the allegations regarding the supposed negligence of their navy.

VI.

The statements made regarding the Alabama in the VIth part of the British Case conflict but little with those made in the American Case. In many respects they strengthen the American statement.

1. There is no discrepancy as to what took place in Liverpool prior to the escape of the vessel. Some new facts are introduced. For example: (*a*) That in reply to Mr. Adams's first representations, the law officers of the Crown advised that he should be informed that Her Majesty's Government was investigating the case, and that their course would depend upon the nature and the sufficiency of any evidence of a breach of the law which they might obtain; (*b*) that the official legal advisers of the customs gave opinions on the evidence contained in Mr. Adams's representations which were in conflict with the opinions of the law officers of the Crown; (*c*) that these opinions were given upon the

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questions after they had been submitted to the law officers of the Crown, and before the latter had rendered their opinions; (*d*) that the customs department of Her Majesty's Government (to which Mr. Adams was referred by Earl Russell as charged with the management of the affair) acted on the opinions of their own advisers, at a time when they must have known that the law officers of the Crown had the subject under consideration.

2. The opinion of the law officers of the Crown, now first made public, confirms the views of the United States presented in their case.

3. It appears that the commissioners of customs knew on Tuesday, the 29th of July, that the Alabama had escaped that day, and that it was not until Friday, the 1st of August, that the collectors at Holyhead and Beaumaris received instructions to detain her. On the 2d of August the collector at Beaumaris reported that he had attended to his instructions, and had found that the Alabama had left Point Lynas on the morning of Thursday, the 31st. If, therefore, the instructions given on the 1st of August had been given on the 29th of July, the Alabama might have been detained at Point Lynas.

4. Her Majesty's Government introduce a dispatch of Mr. Adams regarding his correspondence with Captain Craven, apparently with a purpose of assuming hereafter that Captain Craven was guilty of some negligence. It appears that Captain Craven was at Southampton with his vessel (the Tuscarora) on the 29th of July; that he left there for Queenstown, arriving at the latter place on the 30th; that, on the 31st, he received a telegram informing him that the Alabama was off Point Lynas; and that on the 1st of August he set sail up St. George's Channel toward that point. Mr. Adams objected to the course he took, as bringing him within British waters. Facts, revealed subsequently to Mr. Adams's dispatch, show that the Alabama had left Point Lynas before Captain Craven knew that she had been there. Without regard, therefore, to principles which might well be disputed, this fact relieves the Arbitrators from considering any supposed responsibility of the United States for the acts of the Tuscarora at that time.

5. The British consul's report of the visit of the Alabama to Martinique shows that she was in the habit of sailing under the British flag. This was known to Her Majesty's Government on the 17th of December, 1862.

6. In January, 1863, the Alabama entered Port Royal, Jamaica, for repairs and to land prisoners. The course of the Governor in allowing such hospitalities to be granted was approved by Earl Russell, February 14, 1863. This approval appears to have been given without regard to the advice of the law officers of the Crown. (Appendix, page 212.)

7. Great stress is apparently laid on the reception and acts of the Alabama in Brazilian waters. The United States invite attention to the striking contrast between the course of Her Majesty's Government in the acts complained of before the Tribunal, and the course of the Emperor's Government, as shown in inclosure No. 4, on page 276 of the Appendix; as shown in the Brazilian circular on page 284, stating that "the Confederate States have no legal existence;" that they have been recognized as belligerents only "with the necessary restrictions," and that the exportation of warlike articles from the ports of the Emperor to the insurgents, whether under the Brazilian or a foreign flag, was forbidden; but that a similar trade to the ports of the United States was forbidden only to the Brazilian flag; as shown in the rule as to coal; and as shown in the carefully drawn distinction between hospitalities like those permitted in the British West Indian ports for the purpose of

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aiding a vessel in a hostile cruise, and hospitalities given to enable a vessel to reach a home port.

8. Her Majesty's Government aver that the original crew of the Alabama was not enlisted for the service of the insurgents. The United States contend that the evidence shows that a large portion of the crew knew quite well whither they were going.

9. The United States contend that it is immaterial whether they did or did not make any efforts to capture the Alabama. The fact is, however, that they made great efforts, and incurred great expense for that purpose.

The United States also respectfully refer the Tribunal of Arbitration to the correspondence with the Portuguese Government and authorities concerning this vessel, which is contained in the documents submitted with this Counter Case.

VII.

The evidence offered by Great Britain regarding the Georgia is in the main identical with that offered by the United States. In some respects the new documents strengthen the case of the United States.

1. It appears that Her Majesty's Government was officially informed, by its own officials, of the suspicious character of the Alar, two days in advance of Mr. Adams's information, and that it took no steps in consequence.

2. It is intimated that Mr. Adams was in possession of information, before the sailing of the Georgia, which he should have communicated to Her Majesty's Government, but it is conceded that the information would not have justified conviction under the Foreign Enlistment Act, and that Mr. Adams had, before then, been informed that Her Majesty's Government could not act on less complete representations.

3. It appears that orders were given to a British vessel of war to proceed to Alderney, but it does not appear whether those orders were or were not obeyed.

4. The report made in 1871 of the arming of the Georgia differs from, the contemporaneous accounts made by eye-witnesses.

5. When Her Majesty's Government made the statement that no serious endeavor to intercept or capture the Georgia appears to have been made on the part of the United States, it was mistaken. This correction is, however, made under protest that the United States were under no obligation toward Great Britain to relieve her from the consequences of her original wrong-doing.

VIII.

As with the other vessels, so with the Shenandoah, the evidence in the two cases is largely the same, and the evidence exclusively presented by Her Majesty's Government strengthens the views and theories of the United States.

1. It appears in the opinion of the law offices of the Crown, (pages 141, 142,) that the Sea King was regarded as a British vessel until after its arrival at the Azores; that acts took place there on its deck which were esteemed to be violations of the Foreign Enlistment Act; and that the question whether her deck was not at that time a place belonging or subject to Her Majesty was thought to be a serious one. The acts which are referred to as having taken place there within British jurisdiction were some of the acts of which the United States now complain.

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2. The United States do not admit that the persons who went out in the Laurel are to be regarded as ordinary passengers. They were persons who, in violation of the duties of Great Britain as a neutral, were recruited in England to serve on the Shenandoah.

3. The official report of the governor of what took place at Melbourne confirms the account given by the United States in their case. By inclosure 19, on page 499, (appendix,) and by inclosure No. 22, on page 500, it appears that immediately after her arrival at Melbourne she was known as the Sea King. By paragraph 9, pages 505–6, it appears that the commander was not pressed to go to sea until he was quite ready to go; by paragraph 20, on page 507, it appears that the governor was consenting to the condonation of the offenses of the Shenandoah against British neutrality; by the police report, on page 523, it appears that the government was officially informed by its own officers that the commander intended to ship forty men at Melbourne; and by inclosure 90, page 529, it appears that, although the stay of the Shenandoah at Melbourne was nominally for the repair of the screw and its bearings, that part of the machinery was not touched until the vessel had been fourteen days in port. The United States cannot admit that there was any vigilance exercised by the officers of the Colonial Government.

4. The United States, for reasons stated in their case, cannot agree with Her Majesty's Government in the statements, made in the first paragraph of page 160 of the British Case, regarding the crew of the Shenandoah and Temple's affidavit; nor can they accept as true the statement of the commander of the Shenandoah cited by Her Majesty's Government on page 167, that on receiving intelligence of the overthrow of the insurrection, he "desisted instantly from further acts of war."

5. The United States, as to the Shenandoah, make the same statement which they have already made in reply to the statements of Her Majesty's Government touching attempts to intercept or to capture the Georgia.

IX.

On page 167 of the case of Her Majesty's Government, it is said: "If the Tribunal should come to the conclusion that Great Britain has incurred any liability to the United States, the question will then arise what should be deemed the just measure and extent of that liability. Her Britannic Majesty's Government abstain at present from entering into that question, and will reserve such observations as may be fitly offered in relation to it to a later stage of the proceedings. Here it is sufficient to remark that a claim on the part of a belligerent to be indemnified at the expense of a neutral for losses inflicted or occasioned by any of the ordinary operations of war, on the plea that those operations were assisted or facilitated by negligence on the part of the neutral government, is one which involves grave considerations, and requires to be weighed with the utmost care. Losses of which such negligence is the direct and proximate cause, (and it is in respect of such only that compensation could justly be awarded,) are commonly not easy to separate from those springing from other causes."

The United States concur with Her Majesty's Government in the opinion that "a claim on the part of a belligerent to be indemnified at the expense of a neutral for losses inflicted or occasioned by any of the ordinary operations of war" "is one which involves grave considerations, and requires to be weighed with the utmost care." Without the explanatory observations which Her Majesty's Government reserves the right to make in a later stage of the proceedings, they cannot say how far

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they do or do not concur in the further statement that compensation can only justly be awarded by the Tribunal in respect to losses of which the negligence of the neutral is the direct and proximate cause.*

It appears to them, however, that certain general considerations may reasonably be assumed by the arbitrators. 1. Both parties contemplate that the United States will endeavor to establish in these proceedings some tangible connection of cause and effect between the injuries for which they ask compensation and the "acts committed by the several vessels," which the Treaty contemplates, are to be shown to be the fount of those injuries. 2. The Tribunal of Arbitration being a judicial body, invested by the parties with the functions necessary for determining the issues between them, and being now seized of the substance of the matters in dispute, will hold itself bound by such reasonable and established rules of law regarding the relations of cause and effect as it may assume that the parties had in view when they entered into their engagement to make this reference. 3. Neither party contemplates that the Tribunal will establish or be governed by rules in this respect which will either on the one hand tend to release neutrals from their duty to observe a strict neutrality, or, on the other hand, will make a course of honest neutrality unduly burdensome.

Leaving now the issues raised by the Cases and Counter Cases of the two Governments to the arguments of counsel and to the decision of the Tribunal, the United States repeat with a strengthened conviction the language with which they closed their Case: "It is in the highest interest of the two great powers which appear at this bar that the causes of difference which have arisen between them should be speedily and forever set at rest. The United States entertain a confident expectation that Her Majesty's Government will concur with them in this opinion."

* On the 469th page of the American official case, in the English language, after enumerating the several classes of claims for injuries, the United States say: "*So far as these various losses and expenditures grew out of the acts committed by the several cruisers*, the United States are entitled to ask compensation and remuneration before this Tribunal." In the unofficial French translation, made for the convenience of the Arbitrators, there is no equivalent for the important words in italics above cited, (*French version, page* 377.) The agent of the United States received the book just as the conferences at Geneva in December were about to begin, and did not discover the error in time to correct it at that conference. He now takes the first opportunity to call attention to it.

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42D CONGRESS, 2d Session. | SENATE. | EX. DOC. No. 68.

LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a Senate resolution of April 19, 1872, the report of a board of engineers upon the present condition of the Mississippi River between Saint Louis and Alton.

APRIL 25, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
April 24, 1872.

The Secretary of War has the honor to transmit to the United States Senate, as requested in a resolution of the 19th instant, copy of a report of a board of engineers upon the present condition of the Mississippi River between Saint Louis and Alton, and to accompany the report with a copy of a letter of the Chief of Engineers on the subject, of a prior date.

WM. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., April 23, 1872.

SIR: In compliance with the following resolution of the Senate of the United States of the 19th instant, viz: "That the Secretary of War be, and he is hereby, requested to communicate to the Senate, for its information, the report of the board of engineers on the present condition of the Mississippi River between Saint Louis and Alton," I beg leave to transmit herewith a copy of the report referred to, dated April 13, 1872, together with a copy of a letter in relation thereto from the Chief of Engineers to the Secretary of War, dated March 19, 1872.

The resolution is herewith returned.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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REPORT OF A BOARD OF ENGINEERS ASSEMBLED BY VIRTUE OF THE FOLLOWING ORDER:

[Special Orders No. 20.—Extract.]

HEADQUARTERS CORPS OF ENGINEERS,
Washington, D. C., February 7, 1872.

I. A board of engineers, to consist of Lieutenant Colonel John Newton, Corps of Engineers; Lieutenant Colonel W. F. Raynolds, Corps of Engineers; Major G. K. Warren, Corp of Engineers; Major W. E. Merrill, Corps of Engineers; Captain C. J. Allen, Corps of Engineers, will assemble at Saint Louis, Missouri, on the 19th instant, or as soon thereafter as practicable, to examine and report upon such questions connected with the harbors of Saint Louis, Missouri, and Alton, Illinois, and with the banks of the Mississippi, as shall be placed before it by further instructions from these headquarters.

The junior member will record the proceedings.

* * * * * * *

By command of Brigadier General Humphreys.

THOS. LINCOLN CASEY,
Major of Engineers.

The following instructions were placed before the board by the senior officer:

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., February 7, 1872.

COLONEL: The board of engineers constituted by Special Orders 20, Headquarters Corps of Engineers, February 7, 1872, to convene at Saint Louis, Missouri, February 19, of which you are the senior member, will examine and report upon the present condition of the Mississippi River between Alton and the mouth of the Maramec, with a view to the preparations of plans, with estimates of cost, for the improvement and maintenance of the harbors of Saint Louis and Alton, and also for the prevention of the erosion of the banks of the river.

The board will examine all the maps and projects that have been heretofore prepared, and thoroughly investigate the subject, giving their views and recommendations as to the proper steps to be taken to secure the desired improvements and maintenance, and report a project or projects, with estimates of probable cost, for the permanent improvement and maintenance of the harbors named, and which will secure a permanence to the channel-way of the river between Alton and the mouth of the Maramec.

The board will designate the works intended to afford prompt relief at such points as may seem to require it.

Colonel Raynolds will be directed to furnish the board with all reports, maps, and other information in his possession bearing upon the subject, and will be authorized to employ his assistants in procuring any further information they may desire.

By command of Brigadier General Humphreys.

JNO. G. PARKE,
Major of Engineers.

Lieutenant Colonel JOHN NEWTON,
Corps of Engineers, New York City.

In compliance with the above instructions, the board examined all the plans and projects that have come to their knowledge, bearing upon

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the river and its improvement within the limits specified, and also consulted with the city authorities of Saint Louis and Alton, with civil engineers, and others who were familiar with the requirements of commerce and the peculiarities of the stream upon which they are required to report.

They also made a personal examination of the river from Alton to the mouth of the Maramec.

The section of river from Alton to Lower Saint Louis has been described, more or less in detail, in the various reports that have been submitted, viz: in Captain Lee's report of 1837, Captain Cram's report of 1844, Colonel Merrill's report to the city of Saint Louis in 1869, General Warren's report on Alton Harbor and vicinity in 1868, and General Raynold's report, upon the entire portion under consideration, of February, 1871.

A brief description only is therefore necessary to aid in the present discussion of the subjects.

The general course of the river from the upper part of Alton to the junction of the Missouri and Mississippi is the ——— of south, the distance, measured along the usual channel of the river, being nearly five miles. Thence, to the mouth of the Maramec, the course is nearly south; the distance, measured along the channel of the river as surveyed in 1870, is thirty-seven miles; the whole distance being about forty-two miles.

At the upper part of Alton the rocky escarpment known as the Illinois Bluffs begins, bordering and rising above the surface of the river to the height of 200 to 250 feet and continuing up to the mouth of the Illinois.

The opposite shore, in Missouri, is alluvial. Ellis Island lies in front of the lower part of the town, and separated from the Missouri shore by a slough averaging 1,000 feet in width.

The east bank of the Mississippi from Alton all the way to the mouth of the Maramec, and below, is alluvial, subject to overflow at high stages of the river, and, where not artificially protected, everywhere liable to erosion. This low land is from five to eight miles in width and forms part of what is called the "American Bottom." It has been protected from overflow, in some portions, by levees, and mostly cleared of forests, and contains a number of swales and lakes. All the railroads approaching Saint Louis from the eastward are located upon it.

On the west bank the shore is alluvial from Alton to the Chain of Rocks, a distance of eleven and a half miles by the course of the river. Within this space the Missouri makes its junction with the Mississippi, the currents of the two rivers meeting nearly at a right angle, causing a violent action against the Illinois shore and seriously eroding it. The point of land between the two rivers is wooded and subject to overflow. At the Chain of Rocks, which extends about one mile along the west bank, an extensive wing-dam has been erected by the city of Saint Louis. This dam will be mentioned again further on.

The west banks are alluvial from the Chain of Rocks along Sawyer Bend down to Saint Louis, and are being rapidly eroded.

At the foot of Sawyer Bend the Saint Louis water-works are located. From this point down to the Maramec the shores are either artificially protected from erosion or formed by the stratified rocks so as to be permanent, excepting about one-half mile at the mouth of the Des Pères, an unimportant stream, forming the present southern boundary of the city.

Between Alton and the Maramec, the river contains a number of allu-

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vial islands, unprotected by any sort of revetment and subject to erosion, and many sand-bars more or less dry, according to the stage of the river.

The islands occur in the following order: Ellis Island, opposite Alton, already mentioned; Maple Island, below it, near the middle of the stream; Mobile Island, on west bank, immediately below the mouth of the Missouri; Chouteau Island, near the east bank; Wilson's Island, near west bank, immediately opposite; Cabaret Island, near east bank, immediately below Chouteau Island and below the Chain of Rocks; Arsenal Island, near the middle of the river, below Bloody Island, or East Saint Louis; and Carroll's Island, near the east bank, below Jefferson Barracks. These islands are, with the exception of Chouteau Island, all separated from the main shores by sloughs. Chouteau Island Slough has been closed by a high dike. What was Bloody Island, opposite Saint Louis, is now East Saint Louis, the island having been connected with the main shore by a high dike or causeway. To the west of Cabaret Island is a small alluvial island, no name, between which and Cabaret Island is the channel called Pocket Chute.

The different projects that have been submitted will be mentioned in their order, commencing at the one highest up the river.

A canal to connect the Missouri and Mississippi Rivers at Portage Des Sioux.

It has been proposed to turn the Missouri into the Mississippi about eleven miles above their present junction, with the view of permitting the superior force of the Missouri to expend its strength against the rocky shore of the eastern bank of the Mississippi opposite the proposed new junction; and it has been claimed that this would effectually remedy all the existing and prospective evils as far down as Saint Louis.

The board would simply refer to the fact that the difference in level between the surfaces of the two streams at the ends of this proposed canal, when the Mississippi was 4 feet above low water and the Missouri at low water, was, according to the survey made in 1843, 7.3 feet, and that the soil through which the proposed canal would run is the light alluvial deposit common to the banks of the Missouri and Lower Mississippi. In their opinion a canal with this fall, through such a soil, carrying the volume of water in the Missouri, would set in operation forces the result of which cannot be foretold; it can neither be predicted what course the stream would take below the new junction, nor what would be the expense of confining the stream to the new artificial channel and of preserving any desired course below. They therefore dismiss the further consideration of this project.

Harbor of Alton.

Ellis Island and the bars at its head divide the Mississippi River here into two channels, thus aiding in the formation of a bar along the city-landing, which seriously interferes with commerce. The extent of the bar varies in different years and at different seasons, but it is at all times an obstruction which the wants of the city of Alton require should be removed. To effect this but one method has been proposed, namely, the very obvious one of closing the channel to the west of Ellis Island and throwing all the water through the eastern or harbor-channel. The board believe this should be done, and would class this improvement as one demanding immediate attention.

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Considerable difference of opinion exists as to whether the proposed dike for closing the channel should be only high enough to turn the water at a given stage, (say 6 feet above ordinary low water,) or if it should be carried up above high-water mark. In the latter case, it would serve as a roadway and be of immense value to the inhabitants of both sides of the river.

Several estimates for this work have been submitted, varying in amount from $15,000, for a low dike, to $112,000, for a high dike. The width and depth of the channel have increased since the first-named estimate was made, and the board do not think that this sum would now erect a dam of sufficient stability and height to accomplish the desired object. Basing their opinions on the cost of the dam erected by the city of Saint Louis to close the channel east of Bloody Island, which cost about $105,000, they would estimate the cost of a low dike at $40,000 and a high dike at $75,000. The estimates include a sum necessary to close the chute between the head of Ellis Island and the small island, or tow-head, immediately above it, to transfer the wash from the back-water—produced by the proposed dike—from the head of Ellis Island to the head of the small island, which is of little value.

The erosion opposite the mouth of the Missouri.

The current of the Missouri, as before stated, strikes that of the Mississippi nearly at a right angle, forcing the water of the latter against the Illinois shore, causing it to wear away rapidly.

The rate of this movement has been as follows: since 1868, 450 feet average depth of erosion, and since 1813, 4,500 feet.

In 1868, a revetment at the end of the Madison County Railroad embankment was standing as a pier, or abutment, some 300 feet beyond the general curve of the bank, forming a landing for steamers. Since then, the stream has cut through the tongue of land connecting the revetment and line of shore. There was an immediate receding of the shore line of several hundred feet, and what was the revetment is now a pile of stone on the edge of the Mobile Island Bar, and distant 950 feet from the present Illinois shore.

The idea that there is danger of the Mississippi River changing its course at this point, so as to flow through the valley of Long Lake, thus leaving the city of Saint Louis some miles from the river, has been a source of alarm, in the minds of many, for years, but the board do not find that it has been entertained in any official report, excepting that made by Captain (now General) Cram in 1844. The board cannot imagine that there are valid grounds for apprehension on this point. The head of the swale known as Long Lake is some 8,000 feet beyond the lowest point where the erosion is going on. A high-water levee is already built, which is intended to prevent the flow of water, during floods, in that direction, and, even if the river should reach the swale, the growth of trees and underbrush would so impede its progress as to prevent its forming any considerable channel.

The erosion is destroying land worth, perhaps, $100 per acre, and, after the abrasion has progressed some 1,300 feet further, the Chicago and Alton Railroad track will be in danger; but when that time comes, the railroad will afford facilities for arresting the encroachments, and the corporation will doubtless protect its own interests. The proposition to prevent, or at least lessen, the action of the river at this point, by re-opening Mobile Chute, is worthy of consideration, and the board would recommend that the snags and other obstructions, which

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now obstruct the flow of water through that channel, should be removed by the snag-boats now employed on the rivers.

If it is proposed to stop the erosion by revetting the banks, or by jettees, over four miles of the bank will require protection, which will probably cost, for the first case, $500,000, and for the second, from $300,000 to $400,000.

From the mouth of the Missouri to the Chain of Rocks (or the head of Cabaret Island opposite) the river requires no special attention at present. At this latter point, during the high water, the river is divided by Cabaret Island into two channels, the western passing along Sawyer Bend, the eastern through Cabaret Slough. During ordinary low stages, very little water passes through the slough, though it is considerably the shorter route. At lowest stages the slough is dry. For years the project of diverting a portion or all of the river, at all stages, through Cabaret Slough, for the purpose of removing the extensive bar along the northern wharf of Saint Louis, has had its advocates, and, to effect this, the city built what is known as the Grand Chain Dike, a structure running out from the shore on the rock foundation for 1,400 feet, then turning nearly at a right angle down stream for 2,000 feet.

Several hundred feet of the lower portion have disappeared by sinking; the rest is in a fair state of preservation. The effect of this structure has been just the reverse of what was intended.

The dike, when not submerged, serves as a partial dam, causing the water to circle round the end of the longitudinal portion and impinge upon the shore below. At medium and high stages the river flows over the dike without any more effect being produced than would be expected from a low submerged dam. As it is, it produces no effect toward turning any portion of the river into Cabaret Slough.

Aside from the serious loss of property, rendered valuable by its proximity to the city, by abrasion of the banks, the great reason for doing something to limit the action of the river in this locality is to protect the works which supply the city of Saint Louis with water, which stand on the western bank of the river just below the foot of Cabaret Island, and which are in danger of being destroyed if the action continues.

A choice must be made between two methods of effecting the desired object: First, to protect the banks in Sawyer Bend and preserve the river as it now is; second, to deflect a portion or all of the water through Cabaret Slough. The board prefer the former, for the reasons that they think it best to make as little change in the regimen of the river as practicable, not shortening it, as the change into the Cabaret Slough might do. Besides the expense of opening Cabaret Slough, if it is practicable to do so, we should have the probable cost of maintaining the flow through the slough and the protection of its banks, which would be an imperative necessity if the entire volume of the river, or a large proportion it, were forced through this channel. The protection of the banks in Sawyer Bend is a definite work, giving definite results.

The board are of the opinion that the protection of two miles of the lower portion of the bend will be all that is required for the present, and the work they would class among those requiring immediate attention.

The cost of protecting the banks is a difficult matter to reach with certainty. Estimates have been submitted by the city engineer of Saint Louis for revetting and protecting this bend, (based upon the cost of similar work done by him on the Missouri River,) at a cost of $33,000 per mile. As a practical engineer, his opinion is entitled to full respect; yet, in view of the fact that the depth of scour and cost of similar works differ greatly, according to locality, in the harbor of Saint Louis, the board do

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not feel certain enough in the matter of cost to accept it for this particular point or to entirely reject it. After full consideration of the fate of numerous structures in the harbor, the board would not place the estimated cost of this proposed work at a lower rate than that given in Colonel Merrill's report to the city of Saint Louis in 1869, viz, $71,105.81 per mile. They wish distinctly to state their belief that, although the effect of the work if completed is definite, nothing but an actual test will determine the cost of construction.

Harbor of Saint Louis.

The magnitude of the interests of this wealthy and rapidly growing city will ultimately demand that the river, throughout the entire length of the thirteen miles of city front, be made to flow in a permanent channel, having stable banks. The outcropping rock in portions of the city front and the general pavement of the levee furnish one of the banks already at hand; the opposite shore (with some comparatively small exceptions) must be formed. To effect this, the city and private corporations have already commenced a series of dikes from the Illinois shore, intended to confine the river to a definite channel. The upper dike, known as Bischoff's, is 1,390 feet long, and leaves a channel-way between it and the city front opposite of 1,440 feet at ordinary stage of water. Below this are two short dikes, known as the Upper and Lower Venice Dikes, 120 feet and 387 feet in length, respectively; 2,170 feet below the latter is the Long Dike, 1,360 feet long, the end of which is 2,390 feet from the opposite (or city) front. Below the Long Dike is a large indentation, which suffered considerable erosion from the effects of an ice gorge on the sand-bars in front of the Saint Louis wharfs during the past winter. Then comes what was once Bloody Island, where are the railroad depots, ferry landings, &c. The western face of this island is the East Saint Louis levee, or stone pavement, upon which almost all the business on that side of the river is done. The distance of the foot of this levee, at ordinary stage of water, from the foot of the city levee opposite, is 1,800 feet at the elevator and 1,550 feet at the Pittsburgh Coal Dike, according to survey of 1870.

Near the foot of Bloody Island is the eastern terminus of the new bridge now under construction. The distance between abutments is 1,582.36 feet at low water, and the two piers still further contract the channel 78.28 feet at the same stage of river. Six thousand two hundred feet below the bridge is the Pittsburgh Coal Dike, a structure above all known high water, excepting the great floods of 1844 and 1855. It is built of sand faced with stone, the end being protected by stone revetment, formed by throwing in stone until stability was found, and on the top of this rip-rapping a heavy, dry wall has been carried up to the top of the embankment. The protection of the end of this dike, we are informed by the president of the company, cost over $100,000. Both above and below the Pittsburgh Dike a large quantity of land has formed. Between the end of the dike and the opposite shore is a channel-way of 1,550 feet.

On the low land, 13,000 feet below the Pittsburgh Coal Dike, are the remains of a low dike built by the city, and near it is a low causeway built for a ferry landing. Just below these dikes is the head of Arsenal Island, which divides the Mississippi River into two not very unequal channels, the eastern of which is known as Cahokia Bend, and was formerly the main channel. Below Arsenal Island the east bank of the

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river is a low sand-bar to opposite the river Des Pères—the lower limits of the city.

The board believe that the ultimate demands of commerce will require that, within the limits above specified, the eastern bank of the river will have to be brought to a line parallel, or nearly so, to the opposite city levee, and at a distance from it at low water of not over twelve or fifteen hundred feet, and rendered permanent throughout the entire distance. The present demands are that, within the upper portion, namely, from Bischoff's Dike down to the East Saint Louis levee, the channel of the river should be confined within the limits specified. To do this, the board recommend the raising and extension of the two Venice Dikes and the Long Dike, which it is estimated will cost $171,586, to which 15 per cent. should be added for engineering and contingencies, bringing it up to $197,323.90.

The board think it possible that an additional dike will be required between Long Dike and the head of Bloody Island, but they believe it best to wait and see if the large indentation will not be at least partially filled by sediment from the river before building it.

The board believe that, when these dikes shall have been built as proposed, the demands of business will soon cause the riparian owners to fill in between them, and to connect the ends of the dikes by a continuous levee, thus giving a permanent river bank, as demanded.

Between the eastern abutment of the bridge and the Coal Dike the river bank does not vary materially from where it should ultimately be, and the board think it safe to leave it for the riparian owners to build out and protect.

Below the Coal Dike there is comparatively little business on either side of the river, until we reach the extensive iron-works in South Saint Louis, (Carondelet,) at which landing there is generally sufficient water. The board believe that ultimately this portion of the river will have to be regulated and that doing so will require the closing of the channel east of Arsenal Island and the building of several long dikes. The location and cost cannot now be definitely stated. The channel east of Arsenal Island is now receiving large contributions of sediment. The channel should be watched and, if observation shows that there is danger of the river leaving the channel to the west, prompt measures should be taken to close the eastern channel.

The board are directed to report projects and estimates "which will secure permanence to the channel-way of the river between Alton and the mouth of the Meramec," and also prevent the erosion of the banks.

A literal construction of these orders would require that all of the part included (over forty miles) should be regulated and brought within a fixed channel-way. To do this demands that the slope and volume of the river should be known at the highest and lowest stages, in order that the channel-way may be proportioned properly. These data do not exist, and can only be acquired by careful surveys and measurements. If a perfectly regulated river is to be formed within the limits stated, the undertaking will be immense and should only be commenced under such impression. It will take years to accomplish it, and the plan will have to develop itself as the work progresses.

A less literal construction of our orders would call for a plan to secure at all stages of the river a channel sufficient for the wants of commerce, without attempting to make the location of the channel permanent.

No surveys other than a simple delineation of the shore-line have been made below the head of Arsenal Island. We are informed by

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pilots that the only obstruction to navigation within the part of the river specified is the sand-bar between the mouth of the Des Pères River and Jefferson Barracks, where the channel is crooked and, in extreme low water, but 3½ or 4 feet deep.

There are, however, several other bars between the mouth of the Meramec and the mouth of the Ohio, having no more water on them than this bar has. The removal of it, therefore, is of comparatively little importance until a general system of improvement between Saint Louis and Cairo is undertaken. The necessity for making this latter improvement is very great, and as the data do not exist for devising an adequate plan and estimate, we would suggest that a survey be authorized to ascertain by careful measurements the slopes and volumes of the river at the highest and lowest stages and the configuration of the bed of the river at all the places where the general navigation requires an increase of depth at low water between Saint Louis and the mouth of the Ohio. An immediate appropriation of $30,000 is recommended for this survey, but it is not improbable that an accurate survey of the whole course of the river between Saint Louis and the mouth of the Ohio will hereafter become necessary, when an additional appropriation will be needed.

The extension of the dikes already commenced, as proposed by the board, will give a channel-way at the stage of water existing at the time of the survey of December, 1870, of 1,500 feet in width, and at low water of 1,425 feet, approximately, corresponding to the width between the city levee and the opposite East Saint Louis levee, the only portion of the river where both banks are permanent and where it can with any degree of fairness be said to be regulated.

In a report upon the regimen of the river, made to a convention of civil engineers held in this city to take into consideration the erection of a bridge over the river, it was stated, "when the width of the river is over 1,200 feet, a bar exists either in the middle or at one of the shores."

The authority for this statement is not given, and nothing but a careful survey and long study can test it; but, assuming its correctness, it follows that the lowest water-way should be contracted to the width given. A less contraction might give a sufficient low-water depth entirely across, but, owing to the shifting nature of the sand, in which the slightest excess of current produces an excess of depth, it would be uncertain. The contraction, if required, could easily be made in the upper portion of the harbor by further extending the dikes, but, as this would hardly be necessary while the lower portion was wider, it seems proper that the authorities controlling the levees already built should take the initiative.

The board cannot close this report without remarking that all the dikes or other works herein mentioned cannot fail to make and preserve land which will accrue to the benefit of the riparian owners. The single strip of land that will be made on the Illinois shore by the contraction of the channel above Bloody Island has been estimated at 500 acres, worth about $1,000 per acre. As a general rule, it may be stated that revetments will preserve valuable land and dikes will form new land, both benefiting riparian owners.

Recapitulation of estimates.

For erection of dikes at harbor of Alton 6 feet above low water	$40,000 00
Protection of two miles of Sawyer Bend	142,211 62

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Extension and raising of dikes in northern harbor of Saint Louis	$197,323 90
Survey between Alton and the mouth of the Ohio River	30,000 00

If a high dike is to be built at Alton, the above estimate will be increased by $35,000.

Respectfully submitted.

JOHN NEWTON,
Lieutenant Colonel of Engineers.
W. F. RAYNOLDS,
Lieutenant Colonel of Engineers.
G. K. WARREN,
Major Engineers and Brevet Major General U. S. A.
WM. E. MERRILL,
Major of Engineers.
CHAS. J. ALLEN,
Captain of Engineers.

SAINT LOUIS, MISSOURI, *April*, 13, 1872.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, United States Army,
Washington, D. C.

We have signed the above report with the expectation that the appropriation of $25,000 asked for in the report from this office of February 17, 1871; for improvement of the mouth of the Missouri, will be made and be applicable for the removal of the obstructions from Mobile Chute, as recommended by the board. The general appropriation for the improvement of the Mississippi, Missouri, and Arkansas Rivers has never been sufficient to justify so large an expenditure in one locality, if it can be avoided.

W. F. RAYNOLDS,
Lieutenant Colonel of Engineers.
CHAS. J. ALLEN,
Captain of Engineers.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., March 19, 1872.

SIR: The board of engineer officers constituted to examine and report upon the present condition of the Mississippi River between Saint Louis and Alton, with a view to the preparation of plans for the improvement and maintenance of those harbors and for the prevention of the erosion of the river banks, have submitted a report thereon, but, it being incomplete in some of its details, it has, at their request, been returned for correction.

Without waiting for its return, I will anticipate its transmittal to Congress, and state in general terms the conclusions arrived at:

1. It is proposed to close the channel west of Ellis Island so as to throw all the water through the eastern or harbor channel at Alton; this to be done by a high or low dike, as may be determined upon.

2. The board do not believe that there are valid grounds for apprehending that the Mississippi will change its course so as to flow into the valley of Long Lake or will form any considerable channel through it.

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3. The proposition to prevent, or at least lessen, the erosion opposite the mouth of the Missouri, by re-opening Mobile Chute, is worthy of consideration, and they recommend that the snags and other obstructions which now obstruct the flow of water through that channel be removed.

4. They prefer to protect the banks in Sawyer's Bend by revetment rather than to adopt the plan of deflecting a portion or all of the volume of discharge through Cabaret Slough.

5. They are of opinion that the river, throughout the entire length of the city front of Saint Louis, should and will eventually be made to flow in a permanent channel; and that the eastern bank of the river will have to be brought to a line parallel, or nearly so, to the opposite city levee, at a distance from it at low water of not over 1,200 or 1,500 feet, and rendered permanent.

The present demands are that from Bischoff's Dike down to the East Saint Louis levee, the channel should be confined within the above limit. To do this they recommend the raising and extension of the two Venice Dikes and the Long Dike; and they believe that, when these dikes shall have been built as proposed, the demands of business will soon cause the riparian owners to fill in between them, and to connect the ends of the dykes by a continuous levee, thus giving a permanent river bank as demanded.

6. They point out the necessity for, and recommend, careful measurements of the slopes and volumes of the river at the highest and lowest stages, and careful surveys of the bed of the stream at all places where the general navigation requires an increase of depth at low water, between Saint Louis and the mouth of the Ohio.

For all of which the following estimates are submitted:

For erection of dike at harbor of Alton 6 feet above low water	$40,000 00
For protection of two miles of bank at Sawyer's Bend	142,211 62
For extension and raising of dikes in northern harbor of Saint Louis	197,323 90
For survey of the Mississippi River from Saint Louis to the mouth of the Ohio River	30,000 00
Total	409,535 52

In addition, Lieutenant Colonel Raynolds likewise recommends the appropriation of $25,000 for the removal of obstructions in Mobile Chute, as well as the employment of the snag-boats provided for western rivers, a recommendation in which I concur. I have, therefore, to recommend the appropriation of $435,000 for the purposes named.

I beg leave to suggest that a copy of this communication be transmitted to the Senate and House Committees on Commerce.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

ACCOMPANYING

The transmission of the annual report of the board of public works of the District of Columbia.

APRIL 30, 1872.—Referred to the Committee on the District of Columbia and ordered to be printed.

To the Senate and House of Representatives:

I have the honor to transmit herewith the annual report of the board of public works of the District of Columbia, submitted to me for that purpose by the governor of the Territory, in accordance with section 37 of "An act to provide a government for the District of Columbia," approved February 21, 1871.

U. S. GRANT.

EXECUTIVE MANSION, *April* 30, 1872.

EXECUTIVE OFFICE, DISTRICT OF COLUMBIA,
Washington, April 29, 1872.

The board of public works having submitted to each branch of the legislative assembly a "report of their transactions during the preceding year," ending March 6th, I have the honor to lay before you, as required by the 37th section of the act creating the present government of the District, duplicates of the reports.

I am, sir, very respectfully your obedient servant,

H. D. COOK,
Governor.

To the PRESIDENT OF THE UNITED STATES.

OFFICE OF ENGINEER OF PUBLIC WORKS,
DISTRICT OF COLUMBIA,
Washington, D. C., April 23, 1872.

GENTLEMEN: I have the honor to transmit herewith, as directed by the board, a bill for paving roadway, curbing, and paving sidewalks, done under the orders of the board of public works, and paid for by them, in front of, or adjoining, property of the United States Government, as indicated in the bill.

Very respectfully,

A. B. MULLETT,
Chief Engineer.

To the BOARD OF PUBLIC WORKS, D. C.

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THE UNITED STATES,
TO THE BOARD OF PUBLIC WORKS, DISTRICT OF COLUMBIA, DR.

To work on Pennsylvania avenue:

Lafayette square:	
6,070 square yards concrete pavement, at $3.20 per yard	$19,424 00
Street crossings, Lafayette square:	
711 square yards concrete pavement, at $3.20 per yard	2,275 20
Opposite Treasury and War Departments:	
5,905 square yards concrete pavement, less ⅛, chargeable to adjoining property—4,920⅝ square yards, at $3.20 per yard	15,746 66
Madison and Jackson places:	
4,057½ square yards concrete pavement, less ⅛, chargeable to adjoining property—3,381 square yards, at $3.20 per yard	10,819 20
Sidewalks, 20 feet wide:	
227 square yards brick pavement, at 80 cents per yard	181 60
Sidewalks, 17 feet wide:	
1,724⅞ square yards brick pavement, at 80 cents per yard	1,379 70
1,673 linear feet curbing, at $1.20 per foot	2,007 60
Scott square:	
6,504 square yards concrete pavement, less ⅛, chargeable to adjoining property—5,420, at $3.20 per yard	17,344 00
2,669 square yards brick pavement, at 80 cents per yard	2,135 20
2,002 linear feet curbing, at $1.20 per foot	2,402 40
Franklin square, Fourteenth street:	
2,925 square yards wood pavement, less ⅛, chargeable to adjoining property—2,437½, at $3.70 per yard	9,018 75
War Department, Seventeenth street:	
5,333⅓ square yards concrete pavement, less ⅛ chargeable to adjoining property—4,444½ square yards, at $3.20 per yard	14,222 40
Circle at Fourteenth street and Massachusetts avenue:	
5,167 square yards wood pavement, at $3.10 per yard	16,017 70
Tiber Creek, from Botanical Gardens to Maryland avenue, (in process of completion:)	
625 linear feet of sewer, at $102.50 per foot	64,062 50
Missouri avenue:	
1,475 linear feet sewer, less ⅛, chargeable to adjoining property—1,229 feet, at $12.68 per foot	15,583 72

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Statement of the receipts of the treasurer of the board of public works up to March 6, 1872.

Date of approval of appropriation act.	Purpose.		Amount.
	FROM THE COMPTROLLER.		
1871.			
July 20.....	For salaries of ward commissioner and pay of laborers, Washington City		$12,000 00
August 23 ..	For defraying two-third expenses of paving and sewering M street north		106,882 66
	For judicial expenses of the board		10,000 00
	For contingent expenses of the board		67,000 00
	For sweeping the streets		10,000 00
	For defraying the expenses of the board prior to July 15, 1871		35,000 00
	For repairs of District armory		1,000 00
	For opening and sewering Eighth street from Boundary street north		3,300 00
August 16 ..	For erecting public drinking-fountains		1,000 00
August 23 ..	For defraying two-third expenses of paving and sewering Seventh street south		103,150 67
August 19 ..	For purchase of lot and erection of station-house in Uniontown		4,800 00
August 11 ..	For improvements and repairs in anticipation of revenues, &c		488,000 00
July 10.....	For improvements and repairs in District of Columbia, &c.		1,040,000 00
	Total received from comptroller		1,882,133 33
	FROM OTHER SOURCES.		
	From water-registrar, for water-rents	$41,654 75	
	From tax assessments on improvement of M street north	22,494 12	
	From canal certificates paid to contractors..	83,454 68	
	From sale of cobble-stone, gravel, &c	1,160 01	
	From permits for opening streets, &c	470 00	
			149,233 56
	Total receipts		2,031,366 89
	Payments per auditor's certificates		$2,007,911 99
	Payments per water-registrar's rolls		16,635 69
	Cash on hand		6,819 21
	Total		2,031,366 89

I certify the above statement is correct.

JAMES A. MAGRUDER,
Treasurer of the Board of Public Works.

MARCH 18, 1872.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

COMMUNICATING,

In compliance with a resolution of the Senate of April 23, 1872, information relative to the recent affray at the court-house in Going Snake, Indian Territory, and recommending the erection of a judicial district in the Indian Territory.

MAY 7, 1872.—Read, ordered to lie on the table, and be printed.

EXECUTIVE MANSION, *May 7, 1872.*

To the Senate of the United States:

I herewith communicate to the Senate a report from the Acting Secretary of the Interior of this date, in answer to the resolution of that body adopted on the 23d ultimo, calling for information relative to the recent affray at the court-house in Going Snake district, Indian Territory.

In view of the feeling of hostility which exists between the Cherokees and the United States authorities of the western district of Arkansas, it seems to be necessary that Congress should adopt such measures as will tend to allay that feeling and at the same time secure the enforcement of the laws in that Territory.

I therefore concur with the Acting Secretary of the Interior in suggesting the adoption of a pending bill for the erection of a judicial district within the Indian Territory as a measure which will afford the most immediate remedy for the existing troubles.

U. S. GRANT.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., May 7, 1872.

SIR: On the 25th ultimo this Department received, by Executive reference of the 23d, a resolution of the Senate in the following words, viz:

"IN THE SENATE OF THE UNITED STATES,
"*April* 23, 1872.

"*Resolved*, That the President of the United States be, and hereby is, requested, if not inconsistent with the public interests, to furnish to the Senate of the United States copies of any papers on file since April, A. D. 1865, relating to the acts of United States marshals and deputy marshals in that portion of the western district of Arkansas now comprising the Indian country. Also, all information in the

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possession of the Department relating to the late outrages at Whitmore Barron Fork, in the Cherokee Nation.

"Attest: "GEO. C. GORHAM,
"*Secretary.*"

I now have the honor to transmit herewith copies of all papers received to this date, containing information in relation to the subject of said resolution.

It will be observed that there is a wide difference in the detail of the circumstances attending the riot, as stated by the United States marshal and by the reports of the Cherokee authorities. The feeling between the United States officers and the citizens of the Indian Territory is very bitter, growing out of the anomalous condition of things in that Territory.

This unfortunate occurrence is but the natural result of the hostile feeling which has existed for some time between the residents of the Indian Territory and the United States authorities in the western district of Arkansas.

Many whites have been adopted into the Cherokee Nation, and the Indian authorities claim the same jurisdiction over such adopted citizens as is accorded by our laws to persons of Indian blood. This right seems to be denied by the United States court having jurisdiction over the Territory, and, on account of such difference, questions of jurisdiction are continually arising which engender very bitter feeling. Some such question seems to have been at the foundation of the recent riot.

The unfortunate occurrence at Going Snake court-house, and the unmistakably hostile feeling which has been referred to as existing between the authorities of the Indian Territory and of the United States, would seem to call for some action by Congress, to prevent a repetition of the acts of violence and harmonize the differences between them.

The bill now pending in Congress for the erection of a judicial district in the Indian Territory, seems to be the most practicable means of accomplishing the purpose. It is authorized by the treaty with the Cherokees concluded on the 19th of July, 1866, and I would, therefore, respectfully urge the passage of said bill at an early day.

I am, sir, with great respect, your obedient servant,

B. R. COWEN,
Acting Secretary.

The PRESIDENT.

DEPARTMENT OF THE INTERIOR,
OFFICE OF INDIAN AFFAIRS,
Washington, D. C., May 6, 1872.

SIR: I have the honor to submit herewith, for your information, slips of newspapers, (four in number,) giving an account of the attack on Deputy United States Marshals J. G. Owens and Peavy, and their *posse comitatus*, at Going Snake district court-house, Cherokee country, together with copy of certified copy of a demand made by Deputy United States Marshal Charles F. Robinson on Lewis Downing, esq., principal chief of the Cherokee Nation, for the surrender of certain Cherokee citizens, who, it is alleged, participated in said attack, transmitted to this

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office by Superintendent Hoag, with his letter of the 29th ultimo, a copy of which is also herewith inclosed.

Very respectfully, your obedient servant,

F. A. WALKER,
Commissioner.

The honorable SECRETARY OF THE INTERIOR.

OFFICE OF SUPERINTENDENT INDIAN AFFAIRS,
Lawrence, Kansas, April 29, 1872.

In pursuance of instructions contained in Department telegram of 23d instant, I proceeded to Tahlequah on the 24th, accompanied by Hon. A. R. Banks, and on careful inquiry and from evidence deemed the most reliable, I submit herewith my report.

An exciting difference had for some time existed between Ezekiel Proctor, a native Cherokee, and one Chesterson, a white man, both having married sisters of Cherokee extraction; consequently Chesterson is by Cherokee laws and customs an adopted citizen, and entitled to all the rights of citizenship. During an excited dispute Proctor, it is alleged, attempted to shoot Chesterson, when the discharge of his weapon took fatal effect upon the person of the wife of the latter, upon which Proctor was arrested, and held for trial for the murder of the woman, in pursuance of Cherokee law. The case was continued and again set for trial on the 15th instant, at which time the verdict was expected to be rendered by a properly constituted court of the nation. While the counsel for the defense was reviewing the evidence, the court was interrupted by the approach of several deputy United States marshals, with an advance *posse* armed with guns, some of which *posse* were near relatives of the deceased, and were known to be determined on the conviction or rescue of the prisoner, ordered the sheriff to recede, and leveled a gun at the prisoner's body, who, while attempting to ward it aside, received the discharge in his leg, and at the same time the contents of another gun was discharged into the body of the prisoner's counsel. The guard, acting in the discharge of their duty, at one repelled the murderous attack, and the result was, as already reported, in the killing of ten or eleven, and the wounding of several others.

This unfortunate scene was ended in a few minutes, and the excitement and confusion which necessarily prevailed precludes the possibility of accurate and concurrent testimony, but as information deemed the most reliable, I inclose herewith the official statement of the sheriff addressed to the Executive, (marked A.) He was in attendance upon the court, and witnessed the whole affair. I also inclose statement of W. P. Boudinot, editor of the Cherokee Advocate, (B,) who reached the spot in time to witness the closing of the affray. The evidence of these two individuals corroborates the facts gathered from other apparently reliable sources, and is believed to be substantially correct.

I inclose slip from the Arkansas Mountain Echo, in which the writer claims that said marshal and *posse* were first fired upon from the court-room, but it will be observed that the writer asserts that his "informant was S. Beck," a Cherokee, and that he was standing *in the court-house door when the firing first commenced, and that he fired the second shot himself.* As the first discharge was at the prisoner, and the second at his counsel, and this Beck, by his own testimony, was in the door and fired the second shot, (which was within an instant of the first discharge,) he evidently condemns his own statement, and strengthens the evidence contained in A and B.

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From the best information I have been able to glean, it appears that the Becks, near relations of the woman killed by Proctor, and others of their comrades, were fearful of the acquittal of the prisoner, and were deeply interested in his rescue from Cherokee authority, and for this reason had procured the presence of said United States marshals to secure his transfer to the Federal courts, and that their near approach headed by Beck discharging his gun into the court-room, left no alternative to the prisoner's guard, under their laws, but to defend the person of the prisoner in their keeping.

The execution of their own laws has been accorded to the Cherokee Nation. Even in the provision for a Federal court within their Territory in the treaty of 1866, their rights were so guarded in this respect as to provide "That the judicial tribunals of the nation shall be allowed to retain exclusive jurisdiction *in all* civil and *criminal* cases arising within their country, in which *members of the nation* by nativity *or adoption* shall be the only parties," as they are in this case. There appears, however, to be an unfortunate conflict of jurisdiction by the United States claiming continuance of jurisdiction over United States citizens who have become Cherokee adopted citizens, in certain cases. I inclose copy of demand by Deputy United States Marshal Robinson on the Cherokee executive for the surrender of persons, including the jury alleged to have attacked the marshals and their *posse*, (D.) Said demand was not acceded to by the executive, but referred (as I was informed) to his council for consideration.

I believe the Cherokee authorities desire scrupulously to pursue the course prescribed by their laws and treaties, and without a renewal of conflict, if left to themselves.

Respectfully,

ENOCH HOAG,
Superintendent of Indian Affairs.

Hon. F. A. WALKER,
Commissioner Indian Affairs, Washington, D. C.

[From the Cherokee Advocate, April 20, 1872.]

A.

The following is the official report of the tragedy in Going Snake district:

GOING SNAKE DISTRICT, *April* 16, 1872.

To his Excellency Lewis Downing, Principal Chief Cherokee Nation:

SIR: In my capacity of sheriff, and as an executive officer of the government, I deem it my duty to report to you an event connected with my position and duties, which may be or may become of national importance.

Ezekiel Proctor, a citizen by birth of the Cherokee Nation, had been arrested by me, or rather had been held under arrest by me, (he having voluntarily submitted himself for trial,) and on yesterday, the 15th instant, his trial was progressing at the regular place of holding court in this district. Previously, that is at the second calling of the court in this case, I had been applied to by a person professing to be a United States deputy marshal, to relinquish possession of said prisoner to him in pursuance of a writ said by him to have been obtained outside of this nation. This application I refused decisively, being assured that I should be quit of my lawful obligation to hold any citizen, once legally arrested, only upon an order from my superior executive officer, to wit:

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the acting principal chief, and such order had not been produced. The person referred to, claiming to be a United States deputy marshal, received my decision and reply with expressions of such plain indifference, if not contempt, of the course of justice of our nation, and also with such evident intention of returning to accomplish his purpose by force, that I felt authorized to and did increase the guard to a number sufficient in my opinion to overawe all such attempts. This I did under the view that as I had decided not to deliver the prisoner up, it was my consistent duty to guard and protect him against being violently taken from under my charge by any person not having proper authority to make demand for him. So the matter stood till the temporary adjournment of the court, caused by certain charges made, as I understood, by the prosecution against the presiding judge, since which time the number of guard was reduced to the customary limit, nothing having been heard further of any attempts to be made to rescue the prisoner from the Cherokee authorities.

Matters were in this position up to yesterday, when, while the court was in session, an assault was made upon the court by a party of white men and Cherokee citizens combined, with the plain purpose of either taking the prisoner by force or killing him. The said assault was made in this manner, to wit: While the court was peaceably progressing, a party of about ten men, most of them white, and some entire strangers to me, headed by a Cherokee concerned in the prosecution of the case, came riding up to the court ground, dismounted, formed in column, and marched toward the court-house, cocking their guns on the way. No notice was taken of them by address, nor did they say a word until one of the foremost, named Sut Beck, having a double-barreled shot-gun in his hand cocked and presented, gave me an order to get out of the way, and a moment afterward one of the same party fired into the house at some one, said to be the prisoner. The fact that the party was led by the most active of those engaged in prosecuting, and their unmistakable hostile demonstrations against the prisoner, who was soon shot, and, so far as I can learn, at the first fire, determined the guard to resist, which they did, and a scene of terrible slaughter immediately ensued which it is impossible accurately to describe. The guard were substantial men whom I could trust, and, as sworn officers of the law, were responsible for the safe-keeping and protection of the prisoner independent of any orders from myself. From the most reliable information I can get, after the prisoner was wounded, Judge Moses Alberty, attorney for defense, was shot while sitting at the clerk's table reading the evidence in the case. This gentleman died in his seat without speaking a word, one or both barrels of a shot-gun having been emptied in his breast by one of the assaulting party just outside the door. Samuel Beck, who was in front of the attacking column, then fell and died. The defendants then transferred the fight entirely outside of the small building, crammed as it was by the jury, judge, and spectators, by stepping outside. This no doubt would have been done before by my order or otherwise, had the least apprehension been entertained by the authorities interested that an assault of force so deadly was about to be made. A part of the guard, however, were outside at the time the firing commenced, and soon the battle raged around the building. It is not necessary to particularize the time and circumstances immediately connected with the fall of each victim of this unexpected, unprovoked, and I may say wholly unwarranted attack upon those concerned in the administration of justice in our country, even if I were able to state it all reliably. Suffice it to say that the fight is estimated to have lasted ten or fifteen minutes. The assailants then

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fled, and the authorities and citizens on the ground occupied themselves with taking care of the wounded and dead of both sides without distinction. Eight dead were hauled to the nearest residence from the court building and outside. One more was found back of the house a short distance, where he had run and fell after being mortally wounded. Another is said to have been found about a quarter of a mile off, in the direction the retreating party took, but I cannot vouch for this. The court after the combat was over, and no evidence of a continuance of the interruption appearing, adjourned till the next day, and all parties were soon engaged in the melancholy task of providing for the wounded and disposing of the dead. Of the former, Deputy Marshal Owens was shot through, and taken to Mrs. Whitmire's, where he received every attention possible under the circumstances. His honor the presiding judge, B. H. Sixkiller, was severely wounded in the wrist. The prisoner, as before stated, was seriously wounded in the leg at the beginning of the affray, the bullet remaining in the bone. William Beck was desperately wounded in the body; Isaac Vann badly in the elbow. Sut Beck, known as White Sut, who took the lead in the onslaught, is reported to be very badly wounded. One of the jurymen was shot through the shoulder. Several others are said to have been slightly wounded. The dead, as far as I can learn, are: Judge Moses Alberty, Andy Palone, Johnson Proctor, of whom Proctor and Alberty were unarmed and not engaged, and men of years. Both were killed by the assailants. Of the Becks, Samuel and Sut, known as Black Sut, were killed. Those who were engaged with them in making the assault and were killed were William Hicks and a son-in-law of the late Polly Chesterson, and two others whose names I am unable to give at present.

I have thought it my duty to be thus particular in giving an account of this deplorable affair that, should the national authorities see proper to move in the matter, it may do so upon as correct information as an officer on the ground at the time it first took place could give. My duty being first principally to the nation, I have no prejudices or feelings to indulge, either in acting myself, or in relating, as in this case, the actions of others.

I have only further to state that, even if it were proper for the deputy marshals to forcibly seize a prisoner from under charge of a Cherokee guard, and that during the holding of court for his trial, I cannot but think that a violent assault of the kind described, without previous warning, information, or demand whatever, is totally indefensible and unjustifiable. Having been informed by one of the deputy marshals that I will be held responsible personally for the resistance made by the guard, I feel it to be my duty to make a truthful statement of all the facts connected with the occurrence in my knowledge, and ask for instruction, and such support as the case and my position may require and justify. An important fact bearing upon the affair, in a legal view, is that Deputy Marshal Owens declares that he in vain attempted to restrain some of those who came with him, and that the arbitrary proceeding of interrupting the court then sitting, in the manner in which it was done, was in direct disobedience of his orders. This only serves to show that he condemned the conduct of his party, which precipitated the conflict, as such orders could not possibly have been expected to control or determine the conduct of the guard and authorities of the court, since they were not delivered in the hearing of the latter, and there was not the slightest ground to infer from anything said by the responsible members of the attacking party, if any, that they were acting only upon their own responsibility, while their actions intimated as plainly as possible that they were bent on bloody mischief.

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Copy of the last two days' proceedings in the trial of Ezekiel Proctor.

MONDAY, *April* 15, 1872.

The special circuit court of Going Snake district met in pursuance to a call by the special presiding judge, Hon. Blackhaw Sixkiller, for the continuance of the trial of Ezekiel Proctor, charged with the murder of Polly Chesterson. Prisoner, and jury, as impaneled at last court, present. The solicitor demanded and disputed the authority of the judge to sit in this trial, questioning the power of the executive to give him authority to proceed after suspending. The answer of defense was, that the presiding judge had not been suspended, but only called before the executive council, to determine whether to suspend him or not on the charges preferred, and that the question had been determined in the negative, and the court ordered to proceed, which order or authority was being obeyed now.

During the progress of the discussion, an armed force of mixed whites and Cherokee citizens, the latter being concerned in the prosecution, made a murderous attack upon the prisoner, without any intimation of their intentions, and a promiscuous shooting immediately took place, in which his honor was wounded, as also was some of the jurymen, and a number of the men attending the ground killed. This unexpected and dreadful procedure broke up the trial for the day, and the court was adjourned till to-morrow 9 o'clock. The rest of the day was taken up with attending upon the wounded and dead.

TUESDAY, *April* 16.—Court, in consideration of the safety of those connected with the trial, and apprehending another possible interruption of its proceedings similar to yesterday, having due regard to the preservation of the public peace and the security of individuals, was called to meet near the Whitmire place, to wit, at the residence of Arch Scraper. Due notification of the place so selected had been given at the place of holding court the day before, and all of the jury were present who were able to attend. Another good and sufficient reason for meeting here was, that the prisoner was seriously wounded yesterday, and was lying at said Scraper's, unable to move with safety, but not waiving his right to be present at the trial. In consideration of the necessity of proceeding with the trial, if possible, and for the reasons stated above, the court was called and held accordingly, the prisoner not waiving his right to be present.

Present, prisoner, and all the jury but one, who had been wounded, and was unable to attend. The court impaneled another one, according to the form prescribed by law, to fill the place of the one unavoidably absent, after which the evidence was closed on part of defense, and the case submitted to the jury, who returned with the following verdict.

We, the jury, find the prisoner not guilty.

ARCH SCRAPER, *Foreman.*

And the court then adjourned *sine die.*

BLACKHAW SIXKILLER,
Judge Special Called Circuit Court Going Snake District.
JOSEPH M. STARR,
Clerk Circuit Court, Going Snake District.

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[From the Cherokee Advocate, April 20, 1872.]

B.

Terrible tragedy—Attack upon a Cherokee court.

From time to time we have chronicled the postponement of the case of Ezekiel Proctor, charged with the murder of Polly Hildebrand, the last trial being set to come off last Monday, the 15th instant. We had business there, and arrived about half past 1 o'clock. And what a sight met our gaze when we rode up to the small school-house where the court had been called. Three men were lying just before the door-step in those negligent and still postures so terrifying to the living. Dark pools of blood issuing from each told the horrible story of the manner of their death. In the house, lying side by side, with their hats over their faces, lay three more bodies—one, all that was left of an old and valued friend. A few steps off, to the right of the door, lay the body of a man with light hair and blue eyes, which betokened his white extraction. Next to the chimney, behind the house, was another, and near by, partly supported against the wall, was a man groaning in the anguish of a a desperate wound. In the bushes, a little further off, was yet another corpse of a youth who had staggered there to die. Looking at the living we saw the presiding judge, B. H. Sixkiller, with his wrist bandaged, where he had been seriously wounded by two bullets. The prisoner was limping about with a bullet in the bone of his leg below the knee. Others were wounded more or less. At the nearest residence was lying, desperately wounded, Deputy Marshal Owens, a man generally respected on both sides of the "line." Some of the badly wounded we did not see, they having fled or been taken care of by their friends. The spectacle which harrowed our sight was the most awful, without any comparison, that we have ever witnessed.

Upon inquiring we learned that about half past 11 of that day a company of whites, headed by a Cherokee, appeared on the court ground, and without any premonition or intimation of their business commenced firing into the court-room, filled, as it was, with a promiscuous assemblage, judge, jury, and spectators, being crowded together in the small space, beyond distinguishment by a stranger. The newly arrived party had been just swelled to the number of about fifteen or eighteen by certain men interested in the prosecution of the case, who had been evidently awaiting the arrival of the former. The prisoner was wounded, and Judge Moses Alberty, an attorney for the defense, was killed by the first discharge. This displayed the object of the murderous attack, and the guard, consisting only of four or five men, whose duty it was to protect as well as hold and guard the prisoner, responded with a degree of unshaken resolution and courage which has rarely been paralleled in history. The attacking party was finally beaten off, and ran off, leaving their horses and some their weapons behind them, and not a few, comparatively, of their number dead on the scene of their lawless assault.

The details of the fight are sickening. We will not attempt to give them. It is enough that the officers in whom were confided the administration of justice, according to our law, were faithful to their trust in an extremely trying hour to the stoutest heart. Although we deplore the occasion which gave opportunity for the display of such heroic fidelity, we cannot but be gratified to know that the love of a Cherokee for the laws of his country can support such an ordeal unflinching.

There is no question as to the lawlessness of the assault upon the court. It is now said the party which came up headed by Sut Beck were

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marshals, and their *posse*, and their business was to arrest the prisoner, Ezekiel Proctor. Any other purpose or authority might as well be assigned for any indications of their business given by the party themselves. They said nothing formally. The white members said nothing at all. The Cherokees accompanying only opened their lips to order the sheriff and others to clear the way. The shooting was commenced by the assailants without notice or demand, and was, in short, totally unprovoked, and with "malice aforethought." Up to the time of the first shot by the company who made the onslaught no opposition had been made to their movements whatever. The Cherokee authorities were left in the dark as to their designs or desires, or were left to gather intimations of both wholly from the actions of the party; and the actions of the party were such that the only possible interpretation was that mischief of the most murderous sort was meant, unjustified by even the flimsiest pretext of authority.

What could a conscientious guard do but resist? And resistance meant the use of weapons which had been provided them in anticipation of just such a possible occasion. The odds against them were terrible, and hence we say that their conduct was not only right and lawful, but heroic.

Let this question, involving, while still unsettled, such dreadful scenes and so much individual suffering and loss, be settled without delay. It should have been settled long since. Here we see the consequences of the careless surrender of one of our main national rights, as guaranteed by treaty, when called in question before the United States district court in cases which were thought too insignificant to notice. If we had been sustained in our claim of jurisdiction in all matters over adopted citizens, there would have been none of this awful slaughter. But our treaty further gives us the right to an internal administration of justice ourselves without hinderance or interruption. Particularly should we be and are we allowed the exercise of this right unhindered when a prisoner, arrested in conformity to our law, is being tried by his country. Without it our privilege of self-government is a farce.

[From the Arkansas Mountain Echo. Fayetteville, April 17, 1872.]

C.

War on the Frontier; eight Indians and three white men killed, thirteen wounded. United States Deputy Marshal Owens mortally wounded.

Some time last February a Cherokee half-breed, by the name of E. Proctor, a noted desperado, shot and killed a Cherokee woman, and attempted to shoot her husband, a white man.

For killing the woman he was arrested and being tried at the Going Snake court-house, Judge Sixkiller, in the Cherokee Nation. The trial had been in progress several days, when some of the jury openly asserted that they would acquit him.

The Cherokee half-breeds and lovers of law and order, knowing this, had notified the United States marshal of the fact, and Deputy Marshals Jo. Peavy and Owens were sent to arrest him for attempting to kill the white man, if he was acquitted by the Indian jury. On Monday last Peavy and Owens, with a *posse* of eighteen men, went to the court-house, where they proposed to wait the decision of the jury, and if the

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prisoner was convicted to let him remain, but if acquitted to take him to Fort Smith. The Indians had evidently expected them, as they were all armed, from the judge to the prisoner, the latter of whom had a Spencer repeating rifle. As soon as the marshals approached the door, although they said they came there for no fuss, the Indians opened fire upon them from within the house, which they had prepared for, by taking out the "chinking," &c., and killed of the marshal's *posse* five Cherokees and three white men, and wounding many more. Of the Indians, three were killed outright and several wounded. The prisoner and his attorney, M. Alberty, and the judge were wounded, and a brother of the prisoner was killed. Of the white men killed, one was George Selvage, of Bentonville; ——— Ward, of Fort Smith; and a young man whose name we could not learn. Deputy Owens was shot through the abdomen and mortally wounded. The killed and wounded were left on the field, except those slightly wounded, who could make their escape. The Indians refused to let the friends of the dead come to take them away.

Our informant, Mr. S. Beck, a Cherokee, (almost white,) is now at Mrs. Doyle's hotel with a bullet in his shoulder. He was standing in the court house door when the firing first commenced, and fired the second shot himself. He was not wounded until the fight was over, and he was some three hundred yards on his retreat. He went to Cincinnati, but being notified that the "full-bloods" were coming to take and hang him, came to this place, where he arrived last night. There are several men of his neighborhood who, with himself, were of the *posse*, who dare not go back to their homes for fear of being killed by the full-bloods.

Incident of the fight.—Sut Beck, known as White Sut, led the party which assaulted the court in Going Snake. He was a relative of the deceased and had been actively engaged in prosecuting Proctor. The first thing he said was to order the sheriff, who was near the door in the house, to stand out of the way, and when the sheriff did, to say to prisoner, who was just behind, "You d——d coward," shoving toward him a double-barrel shot-gun, cocked and presented. The muzzle coming in reach of Proctor, he caught it and bore it downward so quickly that it was mostly discharged between his legs, only one ball entering the leg below the knee, and becoming embedded in the bone. William Hicks, a friend of the Becks, who was on the ground before the attacking party came up, attached himself to it on their arrival, and in the course of the battle was met by Andy Palone, who was voluntarily defending the court. These two, it is said, fired at each other, until Palone fell, and Hicks, who had been swearing dreadfully during the whole combat, was mortally wounded.

Later.—On Wednesday evening, Deputy Marshal C. F. Robinson, accompanied by Dr. C. F. Pierce, arrived here from Fort Smith, having come by the way of the Going Snake court-house, the scene of the dreadful tragedy. He brought with him as far as the place a force of some twenty or twenty-five men sent out under his charge from the marshal's office, at Fort Smith, and accompanied by Drs. Julian C. Fields and C. F. Pierce.

Deputy Marshal Owens died late Tuesday evening; William Beck, son of Jeffrey Beck, was still at the court-house or near there. He received from the physicians all the attention possible, but cannot possibly recover. All the others who were wounded had, we believe, been carried away.

The bodies of Owens and Ward have been taken to Fort Smith. The

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following are the names of all the killed and wounded as given to us by Deputy Marshal Robinson:

Of the assaulting party killed.—J. G. Owens, deputy marshal; James Ward, Riley Wood, Sam Beck, George Selvage, William Hicks, Sut Beck, nephew of Jeffrey Beck.

Wounded.—William Beck, mortally; Sut Beck, son of Jeffrey Beck; George McLaughlin, Paul Jones.

Of the others killed.—Moses Alberty, Johnson Proctor, Andy Palone.

Wounded.—Zeke Proctor, Judge Sixkiller, Isaac Vann, Ellis Foreman, Joe Chouey, John Proctor.

A demand.—The object of Deputy Marshal Robinson in coming here was to make a demand upon the chief (under instructions) for those who resisted the attack made by the marshal's force. He saw the chief on Thursday and started back the same day; but we are unable to state any further facts regarding the matter.

TAHLEQUAH, CHEROKEE NATION,
April 18, 1872.

DEAR SIR: I have the honor to demand the surrender of the following-named citizens of the Cherokee Nation. Said parties were concerned in the attack made on Deputy United States Marshals J. G. Owens and J. G. Peavy, and their *posse comitatus*, at Going Snake district court-house:

Jessie Shell, Zekiel Proctor, Soldier Sixkiller, One Sixkiller, Thomas Walkingstick, John Creek, John Proctor, Icae Van, Ellis Foreman, Joe Channey, and the jury that was impaneled to try Zekiel Proctor.

Yours, very respectfully,

CHARLES F. ROBINSON,
Deputy United States Marshal.

LEWIS DOWNING, ESQ.,
Chief of Cherokee Nation.

DEPARTMENT OF JUSTICE,
Washington, May 3, 1872.

SIR: Referring to my letter of the 30th ultimo, I now have the honor to inclose a copy of a communication just received from the marshal of the United States for the western district of Arkansas, in relation to the late outrages committed in the Cherokee Nation.

Very respectfully,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

Hon. C. DELANO,
Secretary of the Interior.

FORT SMITH, ARKANSAS, *April* 26, 1872.

SIR: I have the honor to acknowledge the receipt of your telegram of the 22d, in regard to troubles in the Cherokee Nation. It reads "Choctaw Nation," but I presume it means "Cherokee Nation," as the

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removal of settlers from the Choctaw Nation is being done under the superintendence of the military authorities.

I made a report to James H. Huckleberry, esq., district attorney, (a copy of which report he inclosed in a communication to the Department of Justice,) of my action in regard to the attack made by a party of Cherokees on Deputy Marshals J. G. Owens and J. G. Peavy, and their *posse comitatus*, at Going Snake district court-house, up to the time of the return of Deputy Marshal C. F. Robinson's party, whom I had dispatched more as a rescuing party than anything else, having been compelled to do so on account of the attempt of the murderers to murder the wounded men, some of whom, for safety, had to be removed thirty miles within the State of Arkansas.

In the reply to the demand on the chief of the Cherokee Nation, Lewis Downing, for the surrender of the parties implicated, he replied that he did not recognize the authority of the United States marshals to make such a demand. It was made with the view of preventing further bloodshed.

Since then I have dispatched Deputy Marshal J. G. Peavy and F. M. Shannon, with a small *posse comitatus*, to Going Snake district to protect, as far as possible, the Cherokees who are desirous of seeing the United States laws upheld in the Cherokee Nation. They have instructions also to arrest, if possible without bloodshed, the parties implicated in the late outrage.

Deputy Marshal W. H. Johnson reports to me that, about seven days after the affair, three Indians, armed to the teeth and painted, went into Webber's Falls, in the Cherokee Nation, looking, as they said, for deputy marshals, threatening to shoot them at sight. He also states that they purchased fifteen or twenty pounds of powder and lead, to be used in murdering deputy marshals.

This disposition of resistance to the authorities of the United States is very common among the full-blood Cherokees, and I might say, without exaggeration, is shared by all, rendering it very unsafe for a United States officer to travel through their country unless accompanied by a strong *posse comitatus*.

I inclose an article on the subject of the late outrage, taken from the New Era of this city.

I will take no further steps in this matter, but will wait instructions from the Department.

I am, sir, very respectfully, your obedient servant,

LOGAN H. ROOTS,
United States Marshal,
By J. W. DONNELLY,
Deputy in Charge of Office.

Hon. GEORGE H. WILLIAMS,
United States Attorney General, Washington, D. C.

DEPARTMENT OF JUSTICE,
Washington, April 30, 1872.

SIR: I have the honor to acknowledge, through your reference, the receipt of a copy of Senate resolution of the 23d instant, asking for certain information in regard to the acts of the United States marshals and their deputies in that portion of the western district of Arkansas now comprising the Indian country, and also for all information in the

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possession of the Departments relating to the late outrages at Whitmore, Barron Fork, in the Cherokee Nation.

I inclose herewith a copy of a letter to this Department from the United States attorney for the western district of Arkansas, and a copy of one to him from Deputy Marshal Donnelly, in relation to the alleged outrages referred to. These letters contain all the information I am able to furnish touching this matter.

Very respectfully, your obedient servant,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

Hon. C. DELANO,
Secretary of the Interior.

FORT SMITH, ARKANSAS, *April* 18, 1872.

SIR: I desire to call your special attention to a very aggravated resistance of United States authority, in which Deputy Marshal Jacob Owens and seven of his *posse* were murdered, and several others severely wounded, and request that you ask the President of the United States to make a demand of the chief of the Cherokee Nation for the surrender of the persons engaged in the assassination.

Some time ago one Proctor went to the house of one Chesterson, a white man, and brutally murdered his wife, who was an Indian woman, and also shot him in the head, making a very dangerous wound; and feeling that the murderer of his wife would be cleared in the Cherokee court, applied to James O. Churchill, esq., United States commissioner, for a writ. The commissioner issued a *capias*, and placed the same in the hands of Jacob Owens and Joseph Peavy, United States deputy marshals, and requested them to repair to the place where the trial was progressing, and if the prisoner, Proctor, was cleared, to then arrest him for the assault with intent to kill the said Chesterson, he being a white man and the United States having jurisdiction over the same.

The marshals with their *posse* repaired to the place of holding court, (in the Going Snake district,) they having previously summoned several persons (Indians) to be present to aid in the arrest, as it was generally understood that said Proctor would not surrender without resistance.

On approaching the court-house the marshals observed several men go around the house with arms in their hands. Deputy Peavy then observed that they (the *posse*) had better ride to the rear of the house, as he believed there would be a difficulty. Deputy Owens then stated that he thought there would be no resistance, and they all rode up in front of the house, hitched their horses, and started to the house. Deputy Marshal Owens instructed his men to be quiet and peaceable, when several men came to the door and fired on the marshals; the fight then became general. The guards, jury, lawyers for defense, and prisoner participated in the fight. The marshals' force being few in number and outside of the house were badly cut up, and were compelled to leave the field, leaving seven dead, and one or two mortally wounded. The marshal, Jacob Owens, has since died of the effects of his wounds. I inclose a letter from Deputy Marshal James W. Donnelly, the clerk for marshal of this district, and also a report of the difficulty in the various newspapers of this city.

I have just had a conversation with Mr. I. A. Scales, an attorney employed in the prosecution of Proctor in the Cherokee courts, who gives

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substantially the following account of Cherokee justice as meted out by their courts. The presiding judge, Tim Walker, being a relation to the party, was disqualified from acting as judge, and the chief appointed Thomas Woolf to act as special judge. The defendant, or some one of his friends, approached Judge Woolf, and requested that he place twelve names on the list of jurors, (it being the duty of the judge to place twenty-four names on the list, and the defendant then selects twelve men to try him;) he refused to do so on three separate occasions, and then resigned. The chief then appointed Blackhaw Sixkiller to act as judge, and he permitted part of the names to be placed on the list of jurors, and they went into the trial. The trial progressed four days, and the judge was suspended on account of charges preferred against him, but was afterward restored by the chief to act, and moved the place of holding court to the school-house, where the difficulty occurred, it being a better place to resist United States marshals. The judge dismissed the *posse* of the sheriff, and turned the prisoner over to a guard of his friends. The whole thing developed the fact that a deliberate plan was formed by Cherokee authorities to clear Proctor of the crime of murder, and to resist the United States marshals and their *posse*. The parties who resisted on this occasion are a part of the same who resisted the marshals a year ago last October, and also who murdered Deputy United States Marshal Bentz, a couple of months ago.

There seems to be a deliberate plan among that class to stand by each other, to do whatever is in their power to clear each other of crime, and to rescue a prisoner when arrested by the marshal, as they have on former occasions, and to murder the officers whenever they attempt to execute the process of the court.

Deputy Marshal Owens was one of the best officers on the force; a quiet, peaceable gentleman, esteemed by all who knew him as an honorable high-toned gentleman, and the Department has lost one of her best officers in his death. I earnestly hope that you may take such steps as you think proper to have the perpetrators brought to justice. Unless the Cherokee authorities aid the United States, it is very doubtful whether or not, with the limited force in our hands, we can make the arrests. On hearing of the resistance to the marshals, Mr. James W. Donnelly, in the absence of the marshal, very promptly dispatched a force to the scene of the difficulty, who buried the dead and brought away the wounded.

They report on their return that the judge held court the day after, cleared Proctor, and that Proctor had fallen back to Rabbit Trap, in the mountains, and that he had fifty men under his command and was fortified. The marshal did not think it prudent to attack Proctor, so he sent his *posse* back to this place, and he and Dr. Pierce, the surgeon, went to Tahlequah to make a demand on the chief for Proctor and those engaged with him in the murder of Owens and his *posse*. We have had great difficulty to contend with in that part of the Cherokee Nation. Four persons were convicted at the May and November terms of 1871 for resisting the marshal's forces in this same neighborhood, in which Deputy Marshal Bentz was murdered, and also near the place where Owens and his *posse* were murdered.

The Cherokee authorities do nothing to aid us in making arrests; in fact they throw all the obstacles possible in the way of the United States authority; and to be tried in Indian courts, as was demonstrated in the trial of Proctor, is the merest farce. No one is ever convicted for high offenses, and they have no law for assault with intent to kill.

Since the trial the Cherokee authorities have indicted several Chero-

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kees for entering into a conspiracy to take a prisoner out of the hands of the court, and if they are found guilty the punishment is death. They are a part of the *posse* summoned by the marshal to assist in making the arrest, and were acting in strict accordance with instructions, and were assaulted by Proctor and his party, and only acted in self-defense. I have no doubt if Judge Blackhaw Sixkiller acts as judge, and they have Proctor and his forces armed, they can convict them. In fact they threatened to take the life of any one who furnished information or aided the marshal's force in making arrests.

Please send such instructions as you think proper, so that those engaged in violation of law may be brought to justice.

I have the honor to be, very respectfully, your obedient servant,

JAMES H. HUCKLEBERRY,

United States District Attorney of the Western District, Arkansas.

Hon. GEORGE H. WILLIAMS,
Attorney General, Washington, D. C.

OFFICE UNITED STATES MARSHAL,
WESTERN DISTRICT ARKANSAS,
Fort Smith, Arkansas, April 20, 1872.

DEAR SIR: On the 11th of April information was filed before James O. Churchill, esq., United States commissioner, by Om. Chesterson, a white man, that Ezekiel Proctor, a Cherokee Indian, committed an assault with intent to kill upon him, at the same time murdering his (Chesterson's) wife, a Cherokee woman.

Colonel Churchill issued a writ for Proctor upon the charge of assault with intent to kill, and it was placed in the hands of J. G. Peavy and J. G. Owens, deputy United States marshals, for service, with instructions to proceed to Going Snake district court-house, in the Cherokee Nation, where Proctor was being tried for the murder of Chesterson's wife, and in the event of Proctor's being acquitted, to arrest him at once, and bring him to Fort Smith for examination. Deputy Marshal Bentz having been killed but a short time before, while engaged on a similar service, the deputies summoned a strong *posse comitatus*, and were joined in the Cherokee Nation by several Indians, who were desirous of seeing the offender brought to justice.

On Monday, the 15th, Peavy and Owens, accompanied by their *posse*, arrived at the court-house, and, dismounting, hitched their horses within thirty yards of the building. They then advanced, Deputy Owens cautioning his companions to be careful and make no hostile demonstrations. Upon arriving within a few feet of the building the deputies perceived that it was filled with armed men, and that they were preparing to make an attack upon them.

Deputy Peavy called to them, stating that he was a United States officer, and that he did not desire any trouble. At this moment a gun was discharged from the building, and in an instant the firing became general. In the space of three minutes seven of the marshal's party were killed, three severely wounded, and Deputy Owens mortally wounded, and has since died. Of the attacking party three were killed and seven wounded, making altogether eleven killed and ten wounded.

Deputy Peavy, assisted by Joseph Vannoy, one of his *posse*, succeeded in taking Deputy Owens to a house within a half mile of the court-house, and at once dispatched to me a messenger for re-enforcements to protect

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Owens, and, if possible, to arrest the murderers, as it was reported that the Indians intended killing Owens.

I immediately raised, mounted, armed, and equipped a force of twenty-one men, whom I placed under the command of C. F. Robinson, and dispatched him at once to Mrs. Whitmire's, in the Cherokee Nation, at whose house Owens was then lying. I also sent by him a formal demand on the chief of the Cherokee Nation for the surrender of the murderers.

Upon arriving at Mrs. Whitmire's Mr. Robinson ascertained that the Indians, to the number of eighty, had taken their wounded and retreated to the mountains, and, under the circumstances, he did not feel justified in following them with the handful of men under his command.

After caring for the wounded and sending the body of Deputy Owens, (who had died before he arrived,) to Cincinnati, Arkansas, Mr. Robinson sent his detachment back to this place in charge of Deputy Joe Tinker, while he, (Mr. Robinson,) accompanied by C. W. Pierce, proceeded to Tahlequah to present to the chief the demand for the surrender of the parties.

After carefully weighing all the testimony at my command, I have come to the conclusion that this cowardly attack upon United States officers, in the lawful discharge of their duties, was premeditated and carefully planned.

The woman killed by Proctor was a sister to a large and influential family in the Cherokee Nation, by the name of Beck. The Becks were of course desirous of having Proctor punished, and for this reason joined the marshal's *posse* to assist in making his arrest if he was acquitted in their courts. The judge of the Cherokee court was a warm friend of the Proctors, and would not permit any of the friends of the Becks to come to the court-house armed, although all of Proctor's friends were armed.

On Monday morning, instead of holding his court at the court-house, which was quite an open building, he removed it to the school-house, in which there were but few windows, and from which they could fire on any person without with impunity. He also removed the sheriff's *posse* and permitted Proctor to be guarded by his own relatives, Proctor himself being armed. He also permitted Proctor to place on the jury men whom he (Proctor) selected. The judge was armed, as was also the jury and every man in the building. And the day after the fight he held court and acquitted Proctor of the murder of Mrs. Chesterson.

These Proctors and their friends, among whom is this judge, belong to an association in which the members are sworn to kill every Indian or citizen of the Cherokee Nation who gives testimony or information in United States courts against another Indian or citizen of the Cherokee Nation.

This association is not confined to this locality, but has its ramifications all over the Cherokee Nation. I am informed that this association was organized before the late war by one John Jones, United States Indian agent, and I believe Indian agent for the Cherokees now, and the members were known as the "Pin Indians."

This information was given to me by a gentleman who has become a citizen of the Cherokee Nation.

Taking all these things into consideration, I am compelled to believe that it was a well-laid plan of resistance to the United States laws. How well it was executed you can judge for yourself.

Owing to the limited force at the disposal of the marshal, these parties will not be brought to justice unless an organized force is sent into

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the Cherokee Nation. I have no expectation of any assistance being rendered by the chief, as it is hinted that he is in part responsible for this massacre of United States officers. I am informed on reliable authority that he has used his influence to procure the acquittal of Proctor; and that he knew for several days, if the United States officers attempted his arrest, there would be a fierce resistance and many lives lost. Knowing this, he did not inform the officers of the Government.

Mr. Owens was one of our best and most careful deputies; he was esteemed and respected by all who knew him, and his death will be a great loss to the Department. This affair becomes more lamentable from the fact that all of the white men killed had families dependent on them for support, who are thus thrown upon the cold charities of the world. These outlaws should be held to a strict accountability for the desolation they have caused.

I would suggest that a company of cavalry be ordered from Fort Sill, if they can be spared, to co-operate with the civil authorities in effecting their capture; without them no good can be done, and it will be absolutely unsafe for any white man to travel through that country.

I omitted to mention that Deputy Peavy, after the fight, was compelled to remove one of our wounded Indian friends to Cincinnati, Arkansas, to prevent the Proctor party from killing him. He was soon after followed to that place by Proctor's friends, who would undoubtedly have carried their threats into effect had it not been for the opportune arrival of Deputy Marshal George F. Deane, accompanied by three *posse com.* who put the outlaws to flight.

I would also state that the party sent out under Mr. Robinson conducted themselves in a very law-abiding manner, committing no acts of retaliation in the Indian country.

In the absence of Colonel Roots, I feel compelled to submit this statement to you, in order that you might take such steps in the matter as will bring it properly before the Department at Washington.

Very respectfully, &c.,

J. W. DONNELLY,
Deputy United States Marshal, in charge of Office.

Hon. JAMES H. HUCKLEBERRY,
United States District Attorney,
Western District Arkansas, Fort Smith, Arkansas.

[Telegram.]

WESTERN UNION TELEGRAPH COMPANY,
Muskogee, Indian Territory, April 27, 1872.

F. A. WALKER, *Commissioner Indian Affairs, Washington, D. C.:*

Have visited Tahlequah, and all is quiet. The tragedy originated from imprudent interference by Federal authority with Cherokees' laws while being duly executed under treaty rights. No apprehension of further violence. The Cherokee authorities have done and will do all that justice can require. Report by mail.

ENOCH HOAG,
Superintendent Indian Affairs.

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WASHINGTON, D. C., *April* 29, 1872.

SIR: We inclose you a copy of a letter from the executive of the Cherokee Nation in regard to the late deplorable difficulty at the court-house in Going Snake district. By the official report of the sheriff of the court it appears that Deputy Marshal Peavy's party approached the court-house, while the court was in session, as an armed body. They exhibited no process, and did not attempt to serve any, or to declare who or what they were, but commenced proceedings by firing on people in the court-house, most of whom were unarmed. There was an armed guard with the prisoner, but these did not return the fire until their assailants had shot the prisoner in their charge and killed his counsel, Mr. Moses Alberty, who was sitting quietly and unarmed at the table examining the evidence.

We have since learned from a trustworthy source that demand has been made by the United States marshal at Fort Smith of the authorities of the nation for the judge, sheriff, and jurors of the court. As this shows a determination to make further mischief and to trample on Cherokee rights, we respectfully request you to take such steps as may be best adapted to stay such proceedings and prevent the further spread of these difficulties.

We are, with respect, your obedient servants,

WILL. P. ROSS,
W. P. ADAIR,
C. N. VANN,
Cherokee Delegation.

Hon. B. R. COWEN,
Acting Secretary of the Interior.

EXECUTIVE DEPARTMENT CHEROKEE NATION,
Tahlequah, April 17, 1872.

GENTLEMEN: It has become my duty to present for your immediate and earnest attention, as representatives of this nation, before the Government of the United States, a question of great practical importance, in which our rights as a nation and the quiet of the country are involved. I refer to the right of *arrest* claimed by the marshal of the western district of Arkansas over the citizens by birth of this nation, where such citizens are held to answer a criminal charge instituted in pursuance of our law, and are being tried by the Cherokee courts for an offense. Or, putting the question more *precisely*, whether the right, authority, and privilege of the Cherokee Nation to regulate its own internal affairs in criminal cases, where its native citizens only are concerned, recognized, confirmed, and guaranteed as such right is by all the treaties between this nation and the United States Government, may be rightly abridged, restrained, and for the time denied, in the very act of its existence by the service of a writ of arrest upon the prisoner emanating from the judicial authorities of the United States. But the exact statement of the point of difference involved, as, also, the proper remedy to be sought in connection therewith, I leave to your intelligence and discretion, and will now proceed to briefly state, for your information, certain facts officially reported to this department yesterday, by the sheriff of Going Snake district, which, while they indicate the fact and nature of the conflict

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of authority referred to, make all proper efforts to settle the question immediately and imperatively necessary.

On Monday, the 15th instant, the circuit court of Going Snake district was called and held at the usual place to try Ezekiel Proctor, a native Cherokee, for the murder, as charged, of Polly Chesterson, also a native Cherokee. After the court had been convened in the morning, and while it was still in session, a company of armed white men, (about nine,) guided or led by a Cherokee who had taken an active part in the prosecution, rode up and dismounted in silence. The party then instantly formed in column and marched rapidly to the court-house door, quickening their pace as they went, and cocking their guns and other weapons. No one had yet given the least explanation of their action or intimation of their object. As they formed in column and marched as stated, they were re-enforced by several men, Cherokee citizens, who had previously arrived on the grounds. These last, like the one who led, had been actively engaged in the prosecution of the prisoner. The one in advance, or one of those in advance, meeting the sheriff at the door, said to him, with gun cocked and presented, to "Clear the way," and immediately one of the party fired into the house at some one, supposed to be at the prisoner, as he (the prisoner) was wounded first. So far the conduct of the whole party unmistakably pointed to, and could only be construed as, an unauthorized and lawless assault, with malicious intent, upon the life and person of the prisoner, and perhaps others. No authority to arrest having been produced or claimed, nor was even so much as an intimation to arrest declared, nor anything said except by persons known to be irresponsible and vested with no official authority whatever; what was said being expressive of contempt of and defiance of the court authorities present, and indicative of a desperate and lawless purpose.

The shot which wounded the prisoner was, with scarcely a moment's interval, followed by another, which killed Judge Moses Alberty, one of the attorneys for defense, who had been sitting prior to the attack at the clerk's table, reading the testimony in the case. The fact that he died in his seat, no chance being given him to move from his exposed situation, just before the doorway, shows that he must have been killed by the first or second discharge, there being hardly any interval between them.

The awful nature and deadly purpose of the assault being thus made apparent, resistance from the lawful protectors of the court, the prisoner's guard, immediately followed, and a scene of slaughter took place sickening to relate. Ten men were killed dead on the ground, most of whom were Cherokees, and a number wounded, some, it is feared, mortally. Deputy Marshal Owens was among the latter. He died the second night following. His honor Judge B. H. Sixkiller was severely wounded, as also were two of the select jurymen, one of the latter severely. The assailants, after fighting ten or fifteen minutes, fled, and the court, thus violently interrupted, adjourned for the day to make provisions for the dead and the wounded.

It is said, and no doubt truly, that one or more of the parties besides Owens were deputy marshals, holding a warrant of arrest against the then prisoner from the United States judicial authorities at Fort Smith, and that those who accompanied them, or a part of them, were the marshal's *posse*. If so, there was nothing in their proceeding on the occasion which gave to those concerned, to wit, the court, the prisoner, and the guard, the least intimation of those facts, without mentioning the more material one, of their authority in the present instance, and

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any lawful object to be subserved by such violence. One of the deputy marshals, I am reliably informed, has asserted since that he knew no one present. It is just to suppose that he and his accompanying *posse*, if any, were equally unknown to these whom their conduct most vitally concerned, and who with no justice can be held responsible for such ignorance. And if they did not know the persons of the deputy marshals, it is not unreasonable to suppose that they could hardly know the capacity in which the said deputies were acting, or the nature of their true business, if it was not what it seemed to be, without being enlightened. But, though the course of the deputy marshals in this instance is indefensible in any light, even granting that they had a warrant for the prisoner, and might lawfully serve it at the time and place of the tragedy, the important fact remains that the right to do so is undetermined and disputed, as plainly conflicting with our treaty pledges, exclusive right to the unhindered administration of justice among ourselves as a nation, and that while the question remains unsettled it is a fruitful source of great difficulty, and fraught with imminent danger to the peace of the country.

I earnestly solicit you to do what lies in your power to bring the question at issue before the proper Department of the General Government as soon as possible, in such form as will appear to you best adapted to settle it permanently. I am assured that, though the conduct of the United States officers, in the affair as described to you, was wholly unwarranted upon any ground, the calamity would not have occurred had they had a proper conception of their duty and authority in the premises.

I remain, very respectfully, your obedient servant,

LEWIS DOWNING,
Principal Chief, Cherokee Nation.
J. B. WOLF,
Secretary.

Messrs. ROSS, ADAIR, and VANN,
Delegates, Cherokee Nation.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

COMMUNICATING,

In compliance with a resolution of the Senate of April 23, 1872, information relative to the recent affray at the court-house in Going Snake, Indian Territory.

MAY 17, 1872.—Read, ordered to lie on the table, and be printed.

To the Senate of the United States:

I herewith transmit to the Senate a communication of this date from the Acting Secretary of the Interior, and the papers therein described, containing information called for in Senate resolution of the 23d ultimo, which was answered in part on the 8th instant.

U. S. GRANT.

EXECUTIVE MANSION,
Washington, May 17, 1872.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., May 17, 1872.

SIR: Referring to letter of the 8th instant, submitting copies of certain papers in relation to the late outrage at Whitmore, Barren Fork, Cherokee Nation, to be communicated to the Senate in answer to the resolution of that body dated the 23d ultimo, I have the honor to forward herewith the following papers, received at this Department in letter of the Commissioner of Indian Affairs of the 16th instant, being copies of all "papers on file since A. D. 1865 relating to the acts of the United States marshals and deputy marshals in that portion of the western district of Arkansas now comprising the Indian country," called for in said resolution, viz:

1. Statement of P. P. Pitchlynn and others, of grievances of people by being arbitrarily arrested and imprisoned by deputy marshals, &c., May 14, 1866.

2. Copy of letter from the Attorney General of the United States, relative to arrest of Choctaw and Chickasaw Indians by deputy marshals, May 26, 1866.

3. Copy of demand made on Luther C. White, United States deputy marshal, for the release of R. H. Love, inclosing reply thereto, August 12, 1868.

4. Letter of George C. Harris, addressed to H. Colbert, relative to the release of Robert H. Love, August 27, 1868.

5. Petition presented by Messrs. Colbert and Carter for executive

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clemency to one Robert H. Love, in the custody of deputy marshals, western district of Arkansas, March 31, 1869.

6. Statement of J. H. Huckleberry, United States attorney, western district of Arkansas, July 22, 1870, regarding the interference of Cherokee agents with deputy marshals in discharge of their duty.

7. Letter of Captain John H. Craig, United States Indian agent, in relation to the murder of a Cherokee by a Delaware Indian, and interfering of Deputy Marshal Van Buren, August 22, 1870.

8. Letter of Captain John N. Craig, United States Indian agent, inclosing request of deputy marshal for co-operation in securing arrest of Langford Moseley, charged with murder of a soldier of the garrison at Fort Gibson.

Very respectfully, your obedient servant,

B. R. COWEN,
Acting Secretary.

The PRESIDENT.

WASHINGTON CITY, *May* 14, 1866.

SIR: From letters just received from respectable and reliable citizens of our nation, at home, we learn that our people are being greatly annoyed and harassed by the deputy marshals of Western Arkansas, going about our country with an armed force and arresting numbers of our citizens for offenses alleged to have been committed during the late unhappy civil war and since, the persons so arrested being taken to Fort Smith, where they frequently suffer a long and miserable imprisonment until court meets, and where they but too often fail to obtain an impartial trial, in consequence of a more or less lawless condition of affairs and the low estimate put upon the rights and life of the poor unprotected Indian. Such a course is much to be deprecated, as it is calculated to produce alienation and bitterness of feeling, especially as many of the arrests are without any just cause, the main inducement with the assistant marshals being to make fees thereby; and by the costs of unnecessary trials the United States are fleeced and subjected to much unnecessary expense.

Our people are looking forward with an anxious hope to our consummating a treaty which will contain an amnesty for past offenses, so that they will be relieved from the humiliating and aggravating annoyance complained of. As the treaty which we have recently signed contained such a provision, and may be expected to be soon ratified, we take the liberty of appealing to yourself and the honorable Secretary of the Interior, whom we regard as our friends, to interpose with the Attorney General of the United States, to have instructions issued to the district attorney and marshals for Western Arkansas, to suspend such proceedings while our treaty is pending in the Senate.

With great respect,

P. P. PITCHLYNN,
Principal Chief Choctaws.
ALFRED WADE.
WINCHESTER COLBERT,
Governor Chickasaws.
his
EDMAND + PICKINS.
mark.
ROB'T H. LOVE.

Hon. D. N. COOLEY,
Commissioner of Indian Affairs.

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DEPARTMENT OF THE INTERIOR,
Washington, D. C., May 26, 1866.

SIR: For your information I inclose copy of a communication from the Attorney General of the United States of the 25th instant, in reference to the arrests of members of the Choctaw and Chickasaw Indian tribes by deputy marshals of the Western District of Arkansas.

Very respectfully, your obedient servant,

JAMES HARLAN,
Secretary.

The COMMISSIONER OF INDIAN AFFAIRS.

ATTORNEY GENERAL'S OFFICE,
Washington, D. C., May 25, 1866.

SIR: Your letter of 19th instant was received. You request me to issue instructions to the deputy marshals for the western district of Arkansas to discontinue the arrests of members of the Choctaw and Chickasaw Indian tribes, for offenses committed during the rebellion, until the action of the Senate is ascertained in respect to the pending treaty with those tribes. You did not state whether the arrests referred to were or are made under legal process. If they were, the marshals cannot be controlled by direction of this office. If they were not, they were simple trespasses.

I have, however, instructed the United States attorney for that district to discontinue prosecutions against said Indians until the Senate shall have acted on the treaty.

The legal action of the marshals can only be controlled through the district attorneys in the manner stated.

Very respectfully,

JAS. SPEED,
Attorney General.

Hon. JAMES HARLAN,
Secretary of the Interior.

EXECUTIVE OFFICE,
Tishemingo, Chickasaw Nation, August 12, 1868.

SIR: Inclosed you will find a demand made on Luther C. White, United States marshal for the western district of Arkansas, for the release of Robert H. Love, a Chickasaw. You will perceive from the heading that the document was intended to be addressed to the superintendent, or, more properly, to the commissioner of Indian Affairs, at Van Buren. At the time the demand was made for the surrender of R. H. Love to the officer of the Chickasaw Nation authorized to receive him, I was uncertain of the name of the commissioner who ordered Mr. Love to jail, to await his trial at the November term of the United States district court at Van Buren. This was owing entirely to a report received at this office that a change had been made in the commissioner's office; hence the cause of the blank in the address, which was intended to be filled by the officer conveying the requisition. By the advice of Mr. Love's attorneys, the document was addressed to the marshal of the United States.

Upon examination of the document you will find the refusal of the

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marshal to surrender Mr. Love to the officer authorized to receive him, without assigning any argument whatever for keeping Mr. Love a prisoner in the county jail at Van Buren.

The right of jurisdiction in this case, as claimed by the Chickasaws, is fully argued in the requisition, and it is to be hoped that your immediate attention to this subject, by obtaining the decision of the Attorney General of the United States upon it, will settle the difference of opinion now existing between the United States authorities and the authorities of the Chickasaw Nation.

I have the honor to be, your obedient servant,

CYRUS HARRIS,
Governor Chickasaw Nation.

Hon. N. G. TAYLOR,
Commissioner of Indian Affairs.

EXECUTIVE OFFICE, TISHEMINGO CITY,
Chickasaw Nation, July 22, 1868.

Information has reached this office that Robert H. Love, a citizen of the Chickasaw Nation, has been arrested, examined, and sent to prison by your honor * * * for the murder of Philip Kirby, (freedman,) of the Chickasaw Nation. (There follows a legal argument as to right of jurisdiction.)

These, sir, are the constructions which the Chickasaws have put on the third and fourth articles of the "treaty of July 10, 1866," and agreeably to these constructions they claim jurisdiction (exclusive of all other jurisdiction) in the case of Robert H. Love.

Robert H. Love was arrested for the murder of Philip Kirby, by the Chickasaw authorities, and his case examined before the county court of the county where the crime is said to have been committed. But there was not sufficient evidence adduced before the examining court to justify a committal or remand to a higher court for further trial. But this discharge by the examining court does not by any means prevent the grand jury of the county from inquiring into the case at their next sitting, and, if sufficient evidence is found, to indict him before the circuit court.

Having given you my reasons at length for the steps which I have taken in the present case, and sincerely hoping that they are sufficiently clear to satisfy you that they are correct, without having to appeal to higher authority, and having sent an officer of the Chickasaw Nation (the bearer of this requisition) to take charge of the said Robert H. Love, if he be given up, but, if not given up agreeable to this requisition, hoping that the honorable United States marshal will state his reasons on the blank pages of this document, and forward the same by the bearer to this office:

Now, therefore, be it known that I, Cyrus Harris, governor of the Chickasaw Nation, do, in accordance with the seventh article of the treaty of June 22, 1855, and the third and fourth articles of the treaty of July 10, 1866, claim for the Chickasaw Nation the right of jurisdiction in the case of Robert H. Love, a citizen of the Chickasaw Nation, now in confinement in the jail at Van Buren, charged with the murder of Phillip Kirby, a freedman of the said Chickasaw Nation. And furthermore, I do here make a formal demand of the body of Robert H. Love from the United States marshal for the western district of Arkansas, at Van Buren, in

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the State of Arkansas, and I have authorized J. H. Jones, a constable, to receive the same.

Given under my hand and seal of office at Tishemingo City, in the Chickasaw Nation, this 22d day of July, in the year of our Lord one thousand eight hundred and sixty-eight.

[SEAL.] CYRUS HARRIS,
Governor of the Chickasaw Nation.

Hon. LUTHER C. WHITE,
United States Marshal for the Western District of Arkansas.

Attest:

ALEX. RENMIE,
National Secretary.

OFFICE OF UNITED STATES MARSHAL FOR
WESTERN DISTRICT OF ARKANSAS,
Van Buren, July 29, 1868.

The undersigned, United States marshal for the western district of Arkansas, in answer to the within requisition made by his excellency Cyrus Harris, governor of the Chickasaw Nation, for the surrender of the body of Robert H. Love, says respectfully that said Robert H. Love was committed to the county jail of Crawford County, Arkansas, by order of James O. Churchill, esq., United States commissioner for said western district of Arkansas, on a charge of murder in the aforesaid Chickasaw Nation, and that said Love remains in charge of the jailer of said Crawford County for safe keeping, and for his appearance to answer before the honorable the district court of the United States for the western district of Arkansas, at Van Buren, Arkansas, on the 9th day of November next, A. D. 1868; and that the undersigned has no right to surrender the body of the said Robert H. Love on the requisition made by his excellency Governor Harris, and cannot, therefore, comply with the same. All of which is most respectfully submitted.

LUTHER C. WHITE,
United States Marshal for Western District of Arkansas.

WASHINGTON, *August* 27, 1868.

MY DEAR SIR: I inclose herewith a communication from Hon. C. Harris, governor of the Chickasaw Nation, dated at the executive department, August 11, 1868, addressed to Hon. Holmes Colbert, in which he informs him that Mr. Robert H. Love, a Chickasaw Indian, charged with the killing of a negro, member of the Chickasaw Nation, is held in custody by the United States marshal at Van Buren, Arkansas; and the said marshal has refused to deliver up to the officers of the said nation the body of the said Love.

We believe this to be in contravention of the seventh article of the treaty of 1855 between the United States and the Choctaws and Chickasaws, and also the third article of the treaty of 1866 between the same parties.

We respectfully ask that the inclosed letter may be considered in connection with the communication of Mr. Holmes Colbert, inclosing opinion of Hon. John H. B. Latrobe, relative to the construction of the said articles. We hope that proper and immediate steps may be taken to

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have the body of the said Love delivered up by the United States marshal to the proper authorities of the Chickasaw Nation.

Very respectfully,

JNO. H. B. LATROBE,
Per F. C. LATROBE, *Attorney*,
Counsel for Chickasaw Nation.

Hon. CHARLES E. MIX,
Acting Commissioner of Indian Affairs.

EXECUTIVE DEPARTMENT,
August 11, 1868.

DEAR SIR: Mr. Robert H. Love is now in custody of the judicial authorities at Van Buren, charged with the killing of a negro who formerly belonged to Bob Wilson. I some time ago demanded, through Agent Challer, the release of Robert H. Love, claiming jurisdiction under the treaty of 1866, and since that I demanded R. H. Love from the United States marshal, and at the same time sent a constable from Pickens County to take charge of him. The marshal refused to surrender R. H. Love by saying "that he has no right to do so;" and returns the demand, which is forwarded to the Commissioner of Indian Affairs. You are requested to urge the document of Mr. Love. I claim that the United States has no jurisdiction over cases until after the expiration of the two years and ninety days mentioned in the treaty of 1866.

Very respectfully, yours, &c.,

C. HARRIS,
Governor.

Hon. HOLMES COLBERT.

WASHINGTON, D. C., *March* 31, 1869.

SIR: The undersigned, Chickasaw commissioners, have the honor to inclose herewith a petition numerously signed by the most influential and respectable citizens of Arkansas and the Indian country west thereof, praying Your Excellency to extend executive clemency to one Robert H. Love, a Chickasaw Indian, now in custody of the United States marshal for the western district of Arkansas, on the charge of killing a negro named Philip Kirby, *alias* Philip Wilson, on or about the 20th day of February, 1868. At the time of said killing, Mr. Love was United States deputy marshal, and was endeavoring to arrest the deceased on the charge of murder. The deceased, attempting to escape, was fired upon by Mr. Love, who, without intending to inflict a fatal wound, unluckily did so.

The petition appears, by its printed caption, to be addressed to the late Chief Executive, but it was never delivered. A communication was, however, addressed to him on the 16th September last, alleging want of jurisdiction in the marshal to hold said Love, as only the latter, but the negro *Kirby* or *Wilson*, was a Chickasaw Indian, from which fact it resulted that the courts of the Chickasaw Nation only, and not those of the United States, could take cognizance of the alleged offense.

The President kindly referred the question of jurisdiction to Mr. Evarts, the Attorney General, who decided that the case "must be left to judicial control," by which we understood him to mean that, how favor-

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able soever his opinion might be, it would have no power to take the case out of the regular judicial channel.

We now beg leave to present the case upon such merits as the circumstances attending the alleged offense may disclose, which are briefly set forth in the inclosed petition. It is proper to add, however, that Mr. Love was a Union man, devotedly attached to the cause of the United States during the late rebellion.

Trusting that Your Excellency will find it in accordance with your views of executive clemency to extend to Mr. Love a full pardon, your petitioners will ever pray.

HOLMES COLBERT,
COLBERT CARTER,
Chickasaw Commissioners.

His Excellency U. S. GRANT,
President of the United States.

VAN BUREN, ARKANSAS, *December* 1, 1868.

The undersigned petitioners, citizens of the State of Arkansas and of the Indian country west thereof, respectfully represent that Robert H. Love, who is a Chickasaw Indian by birth and life-long residence, and who is now about fifty years of age, was on the 2d day of June, 1868, arrested by the United States marshal for the western district of said State of Arkansas, upon the charge of the murder of Philip Kirby, *alias* Philip Wilson, a negro man in the Chickasaw Nation, on or about the 20th day of February, 1868; that afterward, on or about the 27th day of June, he was brought by said marshal before James O. Churchill, esq., United States commissioner for said district, upon said charge, who, after an examination touching said charge, committed said Love to the custody of said marshal, to be by him safely kept to answer unto an indictment to be preferred against him in the premises in the district court of the United States for said western district of Arkansas, at the next term thereof; that afterward, on or about the 12th day of November, 1868, upon the hearing of a writ of *habeas corpus*, before that time issued, before Hon. Henry C. Caldwell, judge of said court, the question of jurisdiction alone being under consideration, said Love was remanded to the custody of said marshal, by the order of said judge, in whose custody he now is; that said Philip Kirby, *alias* Philip Wilson, was, at and before the commencement of the late civil war, held as a slave in said Chickasaw Nation, and was regarded there as a member of the tribe; that he was freed by the result of the war, and continued to reside in said nation as a member thereof until the day of his death; that, at the time the killing occurred, said Love was a deputy United States marshal and went to the place where said Philip Kirby, *alias* Wilson, was, to see him on private business, and for the purpose of arresting him upon the charge of having a short time before murdered one Leonard Willis, who was also a freedman, and a member, by long residence, of said nation, and whose body had been found in the woods a short time before, with one gun-shot wound and four stabs upon it, and identified and buried, it being the general opinion in the neighborhood that said Kirby, *alias* Wilson, was the perpetrator of said offense; that upon being told by said Love that he would arrest him for said last mentioned homicide, the said Kirby, *alias* Wilson, fled, and was attempting to escape, when said Love hastily drew a pistol and fired at him, the ball taking effect and

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unfortunately inflicting a mortal wound, of which he afterwards died. The said Love was immediately tried before one of the Chickasaw tribunals, having as was supposed jurisdiction in the premises, and was acquitted of said supposed offense, the late Edmund Pickens, ex-chief of said Chickasaw Nation, being a witness, who was present at the shooting, but who has since died and the benefit of whose testimony the said Love cannot therefore now have.

The said Love has always maintained and sustained the character of a good, quiet, peaceable, and law-abiding citizen, of a kind and humane disposition, and we do not therefore believe him capable of committing the crime of murder, and do believe that his case is one which, under all the circumstances, entitles him to strong claims for executive clemency; and we do therefore most earnestly recommend him to the mercy of Your Excellency, and pray that Your Excellency do grant him a pardon in the premises. And, as in duty bound, will ever pray, &c.

R. M. JOHNSON.
JNO. W. CUNNINGHAM.
C. M. BARNES.
WM. B. SUTTON.
HENRY NATHAN.
THOS. LANIGAN.
and eighty others.

His Excellency ANDREW JOHNSON,
President of the United States.

OFFICE UNITED STATES DISTRICT ATTORNEY,
WESTERN DISTRICT OF ARKANSAS,
Van Buren, Arkansas, July 22, 1870.

SIR: I desire to call your attention to a matter of importance connected with the administration of justice in this the western district of Arkansas.

It frequently happens that United States deputy marshals of this district, in the service of writs, are compelled to penetrate the Indian country two and three hundred miles, and while at that distance from the United States commissioner's office at this place, on the service of such writs, frequently come across persons who have committed larcenies in the Indian country, but for whom they have no writs, no information having yet been made before the commissioner here against such persons. Now, if under such circumstances a deputy marshal should not arrest the thief or thieves until he returned here and procured from the commissioner a warrant for such arrest, the accused would invariably be enabled to escape, and the arrest would be next to impossible. In cases where there is no doubt of the commission of crimes cognizable by this court, deputy marshals under such circumstances have sometimes made the arrest without warrants, brought the prisoner here and the witnesses to substantiate the charge, and caused the information to be made and the warrant to be issued immediately on their arrival here. In a case of this kind, which occurred in the Cherokee Nation, about 125 miles from here, where a thief had stolen some cattle from an Indian, a deputy marshal made the arrest without a warrant, and the Indian agent for the Cherokee Nation turned the prisoner loose, or compelled the deputy to do so. He has done the same thing in other cases. Deputy marshals complain that this Indian agent has many times interfered with them in the discharge of their duties as such, and in the ser-

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vice of writs in the Indian country, and that he has gone so far as to order deputy marshals out of the Cherokee Nation.

If such men are not compelled to cease their interference with the processes of this court in the Indian country and to permit the deputy marshals to attend to their duties without molestation, it is useless to send them there or to attempt to enforce the intercourse laws in the Indian country.

JAS. H. HUCKLEBERRY,
United States Attorney for Western District of Arkansas.

Hon. E. S. PARKER,
Commissioner of Indian Affairs.

UNITED STATES AGENCY FOR CHEROKEES,
Fort Gibson, Indian Territory, August 22, 1870.

SIR: I have the honor to report that, some six weeks since, two young men, one a Delaware and the other a Cherokee, both about eighteen years of age, quarreled about some trivial matter, and, as I am credibly informed, a few days afterward the Cherokee went in pursuit of the other, on learning he was on the way from his father's house to a neighboring mill, and attacked him with the purpose of killing him. He wounded the Delaware two or three times with pistol-shots, but in the struggle that took place was killed by the Delaware, with a pocket-knife. The Delaware gave himself up for trial, and the case came up before the Cherokee court last Monday, but, to secure attendance of witnesses, was postponed till next Thursday, August 25. Shortly after the killing, the father of the Cherokee boy, whose name is Cocoa, came to me and stated it was a very aggravated case of murder, but that he feared the murderer would not be punished, on account of alleged partiality of those to be summoned as jurymen in a neighborhood where the larger part of the population are Delawares, and asked for interference on my part. I informed him this was out of the question, and that the Cherokee court was the only tribunal before which the case could be brought. I afterwards learned that there is a strong feeling in favor of the acquittal of the Delaware, grounded on the belief that he acted in self-defense, under murderous assault.

After coming to me, Cocoa went to Van Buren, and obtained from United States Commissioner Churchill a warrant for the arrest of the Delaware, on the ground that the mother of the Cherokee, the wife of Cocoa, is a white woman. The serving of this warrant was attempted by a deputy marshal, but the Cherokee sheriff refused to deliver his prisoner into the hands of the officer of the United States court, as he held him himself as a sworn officer of the Cherokee court. The deputy marshal has gone back to make his return, and the Cherokee authorities apprehend the issue of further processes or orders by the United States authorities, and believing that the Cherokee court has exclusive jurisdiction of the case under provision of the treaty of 1866, have asked advice from me, and the case is respectfully submitted for your instructions in case the United States marshal shall attempt to take the prisoner from the hands of the officer of the Cherokee court or from the court itself during his trial.

Very respectfully, your obedient servant,

JNO. N. CRAIG,
Captain United States Army, Agent for Cherokees.

COMMISSIONER OF INDIAN AFFAIRS.

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UNITED STATES AGENCY FOR CHEROKEES,
Fort Gibson, Indian Territory, January 6, 1871.

SIR: I have the honor to forward a letter received from a deputy of the United States marshal for the western district of Arkansas, asking for co-operation in securing the arrest of Sanford Moseley, charged with murder of an enlisted man of the garrison of Fort Gibson, for whom a *pluries* writ has issued, and whose capture has hitherto been impossible because he has been "assisted and harbored" by citizens of the Cherokee Nation.

The facts in this case are well known to me, and in addition to what is set forth in the inclosed letter it should be stated the murder was done under circumstances that require vigorous measures on the part of the authorities. Although Moseley is harbored in the nation, there are many Cherokees who, on account of his lawless and desperate character, would willingly assist in his capture. It is only with their assistance it can be effected, since he has timely warning of the appearance of United States officials. But I can take no steps in the matter, as Principal Chief Downing has, as I have already reported, refused to secure and deliver to me certain offenders, among whom was included by name this man Moseley, who is a half-blood Cherokee. Nothing could be accomplished in this case by a party of the military. Instructions are respectfully asked for as to the course now to be taken and the answer to be returned to the deputy marshal.

Very respectfully, your obedient servant,

JNO. N. CRAIG,
Captain Tenth United States Infantry, United States Agent.

COMMISSIONER OF INDIAN AFFAIRS.

FORT GIBSON, INDIAN TERRITORY.
January 4, 1871.

DEAR SIR: We have the honor to submit to you a *pluries* writ for Sanford Moseley, charged with the murder of a soldier of the Fort Gibson garrison.

We would further state that the said Moseley is a desperate character of the first degree; that he is now in the Cherokee Nation, and that we have heretofore been unable to effect his arrest, for the reason that he is assisted and harbored by citizens of this nation.

We would therefore respectfully request you to take such steps in the premises as your judgment may dictate for arresting and delivering to us the aforementioned party.

Most respectfully,

C. R. STEPHENSON and
R. FITZ HENRY,
Deputy United States Marshals,
Western District Arkansas.

Captain JOHN N. CRAIG,
United States Army, Agent for Cherokees.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 71.

LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In obedience to law, a report of the examination and survey of Red River from its mouth to a point above Shreveport, Louisiana.

MAY 7, 1872.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT, *May* 7, 1872.

The Secretary of War has the honor to transmit to the United States Senate copy of the preliminary report from Captain C. W. Howell on the "examination and survey of the Red River from the mouth to a point above Shreveport, Louisiana," in compliance with section 2 of the act of March 3, 1871.

WM. W. BELKNAP,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
NEW ORLEANS, LOUISIANA,
April 29, 1872.

GENERAL: I have the honor to transmit herewith a preliminary report, submitted by Lieutenant E. A. Woodruff, giving a general plan, with estimates, for the improvement of navigation in Red River above Shreveport, Louisiana, and in the route from Shreveport to Jefferson, Texas, via Sodo and Fairy Lakes and Cypress Bayou. A sketch of that portion of Red River now obstructed by raft and of a portion of the route to Jefferson accompanies the report.

The recommendations made by Lieutenant Woodruff can only be discussed when his final report is submitted.

The facts elicited by his survey of the Red River "raft region" show that its character has been thoroughly misapprehended by engineers, and that it has been a comparatively unknown country, even to the oldest settlers on its borders. The "great raft" itself dwindles down to a pigmy in comparison with the popular notion of its extent and constitution.

Lieutenant Woodruff's careful personal examination of the whole country covered by his survey eminently qualifies him for deciding the relative value of the several plans heretofore submitted both for removing and for evading the raft. He recommends the removal. The

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plan of operations sketched is the best that can be devised. It is necessarily crude, but will be elaborated in the final report.

The estimates are as good approximates as can be made at this time.

Very respectfully, your obedient servant,

C. W. HOWELL,
Captain of Engineers, United States Army.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. A., Washington, D. C.

UNITED STATES ENGINEER OFFICE,
New Orleans, Louisiana, April 25, 1872.

SIR: I have the honor to submit the following preliminary report on the surveys of Red River and Cypress Bayou, in compliance with your order accompanying a telegram from the Chief of Engineers, dated April 18, 1872. The object of this report being to supply such information as has been obtained by the survey, especially with regard to the improvement of the navigation of Red River from Shreveport to the river above the raft, and of the lakes and Cypress Bayou to Jefferson, Texas, the general results only of the survey are herein given, with a statement of the plans and estimates for such improvements as are recommended. A sketch of the raft region of Red River is transmitted herewith; also, a sketch of the lower end of Sodo Lake, pertaining to the improvement of Cypress Bayou navigation. A general map of the whole region from Shreveport, Louisiana, to Jefferson, Texas, and to the head of the raft, is in preparation, but cannot be completed for this preliminary report. The sketch of the raft shows accurately the portion of Red River obstructed by floating raft and "tow-heads," and characteristic soundings made at the time of the survey. The total of raft covering the whole breadth of the river is seven miles, but throughout almost all of the distance between the head and foot of the raft the channel is partially obstructed. The whole area of floating raft is computed at 290 acres. The whole area of "tow-heads," or raft resting on the bottom and above water at the time of the survey, is computed at 103 acres. According to your letter of instructions, dated October 17, 1871, the object of the survey of the raft region is to determine which of two general methods of improvements is more feasible: the removal of the raft obstructions from the main channel or the opening of some route around them. The latter plan was recommended, and work upon it done by Mr. Charles Fuller, United States agent, under Colonel J. E. Johnstone, topographical engineers, in 1854–'55. The route selected was through Dooley's Bayou, Shift-tail Lake, Sodo Lake, and Twelve-mile Bayou. A survey and careful examination of this route have been made, as well as of all other possible routes on the west side of the river. The details will be fully given in the report to accompany the completed maps, but the results only are here stated. All of such routes are rejected as impracticable, for the following general reasons:

1. The route to be opened should not only afford passage for boats at moderate stages of water, but should have sufficient capacity (depth being the more important) to carry the drift which will continue to come from the upper river till the sources of its supply are destroyed. To give such capacity would require extensive excavations in the clay formations through which any such route would pass, involving great expense for digging or dredging.

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2. Such a route would necessarily be much shorter than the main river, giving a greater fall per mile from its head at the river to the lakes. At several points it would have difficult rapids, and the freshets of the upper river would be brought down so rapidly that the time of high water in it and the river would be greatly decreased. It is probable that any such channel would, on this account, require as high water for navigation as do the present routes, opened under charters from the State of Louisiana.

3. The channel of the main river affords a greater and more uniform depth than can be given to any other route for the cost of removing the raft, and can therefore be most easily adapted to the carrying of new formations of raft. It would afford incomparably better navigation than any other route and for a much longer time after each rise.

That the removal of the raft and the prevention of its reformation is desirable hardly admits of discussion. The need of a cheap mode of transportation of the products of the upper river, the relief of valuable plantations made worthless by overflow, and the prevention of the ruin of more valuable plantations above are sufficient reasons to warrant extensive appropriations for these ends, provided it be shown that the work is practicable within reasonable limits of expenditure. The only objection likely to be raised, except that of expense, is the anticipated injury to the lake and bayou navigation to Jefferson, Texas.

The people of that city are naturally anxious to secure their present facilities and to improve them. Even if their apprehensions were well grounded, they would form an insufficient reason for allowing the ruin caused by the backing up of the water above the raft to spread over the productive valley below Fulton; but it is susceptible of demonstration that the decrease of the water in the lakes, caused by opening the main channel of the river, must be very gradual, and the injury to navigation may be entirely counteracted by means not too expensive to admit of practical application. Such a demonstration will be attempted in the completed report, but here the means only for carrying out desired improvements are indicated, with such estimates as the time and the unfinished state of the maps have enabled me to prepare. To make intelligible the methods recommended for the removal of the raft, it is necessary to explain the nature of the obstructions found in it. Beginning at Carolina Bluffs, the foot of the raft, we find, at low water, an almost complete dam, consisting of a row of tow-heads, extending across the river, between which the water flows rapidly. These tow-heads are formed during freshets by an accumulation of the logs and drift-wood, of which the raft is formed, around some snag, which checks their progress down the river. As the water falls the pile rests on the bottom, and a rapid deposition of mud takes place around it. The surface left above water produces willows, which grow rapidly and bind the mass more firmly together by their roots, which also protect the deposit from the washing of subsequent freshets. The willows found on the tow-heads of this oldest part of the raft are none of them larger than 10 inches in diameter. As shown by the map, the tow-heads are found principally below Dooley's Bayou, in which part of the river they form the principal feature of the raft obstructions. Generally they are islands, but frequently project into the channel from one side, greatly narrowing the water-way.

Above Dooley's Bayou floating raft is more common, and above Red Bayou the tow-heads entirely disappear and the greater areas of floating raft are found. But throughout all the raft much of the material of which it is composed is water-logged and sunken, so that one end

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rests on the bottom. If cut into short pieces, the heavier ends, usually the stumps, would sink, while the lighter parts would float. In removing the raft, therefore, all water-logged trees and stumps must be removed from the channel and deposited where they will not be liable to obstruct navigation. Only a small proportion of the tow-heads will float, and, as they are made up of piles of drift-logs and red mud, their removal presents the greater difficulty. The river below Carolina Bluffs is much narrower than formerly, and its sides fringed with willows, which would impede the passage of large bodies of floating drift. If the raft were removed and a new run of drift brought down by a freshet, it would doubtless jam in some part of the narrow river below Dooley's Bayou, or in the vicinity of Carolina Bluffs. Therefore the banks of the narrow part of the river should be cleared of trees, in order that the caving of banks and enlargement of channel may go on as rapidly as possible. The river above the raft supplies material for new formations. This supply should be stopped or at least diminished. This would require the cutting of all snags, or dead trees, lying on sand-bars or on the banks, which are likely to fall into the river. Cottonwood trees, when deadened, decay so rapidly that if their falling into the river be delayed two or three years, they will not be likely to form raft. The work to be done is, therefore, of three kinds:

1. Clearing of banks and bars above and below the raft.
2. Removal of tow-heads or sunken raft.
3. Cutting up and removing floating raft.

For the first work a party of axmen will be needed below the raft and a larger party, or two parties, above the raft. The work below the raft need not extend below Shreveport. From what I can learn by inquiry, the work above should extend two or three hundred miles above the head of the raft.

For the second work I submit the following plan: Build a strong double-hull scow, 100 feet in length, each hull having 20-foot beam and 36-inch hold; space between hulls 10 feet, each hull to have a steam-capstan, worked by a nigger-engine, which can be used for sawing snags when raised; the pair to be provided with strong shears and all convenient appliances for lifting sunken raft and sawing it up; this boat to be towed by a light-draught steamboat, furnished with a steam-crane on the bow, to be used in discharging on the bank such water-logged raft as may have been cut upon the double boat; apparatus for blasting the tow-heads and battures to be provided; but whether the use of any explosive compound for this purpose will be economical or not can be determined only by experiment. From their structure and situation I think it probable that blasting will facilitate their removal. This work should begin at the foot of the raft. The plan here recommended was suggested to me by the apparent necessities of the work, which can be done to best advantage in low water, when light-draught boats will be required. I have since learned that a similar plan has been recommended for the removal of snags in the Arkansas River, in a report of Captain David Hiner, transmitted by Colonel Macomb to the Chief of Engineers with his report for 1868. (See report of Chief of Engineers, 1868, p. 596.) To Captain Hiner's report I am indebted for estimates of cost of working.

For the third class of work different appliances are required for greatest economy.

I submit the following description of a saw-boat, devised for cutting up floating raft, with auxiliary boats for removing the water-logged parts of the trees cut. One stern-wheel boat, of 175-foot length, 40-foot beam, and 5-foot hold, furnished with sloping sides or aprons for a distance of

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100 feet from the bow, the bow also to be furnished with an apron; these aprons to have a slope of 45° to the water, and to be furnished with cross-cut saws at intervals of 20 feet, connecting at pleasure with shafts under the deck, run by a small engine for that purpose, one shaft parallel to each side and one across the bow; the bow to be furnished with two steam-capstans, and the deck with a steam-crane, all worked by one large nigger-engine in the bow, each connecting at pleasure with the engine; movable shears for lifting at bow or sides also to be provided. The manner of working this boat would be as follows: Beginning at the lower end of a field of floating raft, some of the larger logs would be drawn by the steam capstan or crane to the sides and bow, where they would be cut up by the adjustable cross-cut saws, and the pieces allowed to float down stream. The power of the boat would also be used at times to break loose and scatter the raft. Large trees will frequently be found, the roots of which rest on the bottom, while the top is out of water. The part long under water will not float, and, if allowed to sink where cut up, may prove dangerous to boats in low water. To dispose of such logs it is proposed to have a strong scow, managed by a small stern-wheel steamboat, in readiness to receive the heavy cut logs, which can be lifted by the steam-crane of the saw-boat, the small tow-boat to be also provided with a steam-crane for unloading the scow at the bank, when no suitable place for dumping the load can be found near at hand. In the last work of removing raft, undertaken by Mr. Thomas T. Williamson, in 1841, the side-wheel boat Eradicator (which had been used by Shreve) was used. This boat had an apron at the bow, up which the logs were drawn by a steam-windlass. When conveniently upon the apron they were sawed by hand into lengths of about 20 feet. The stumps, which were too heavy to float, were disposed of with much loss of time, by being taken on the boat to some bayou or lake where they could be dropped out of the channel. In the boat proposed, the sawing could be done by steam-power, without lifting the logs entirely from water until sawed, when those parts likely to sink could be removed on the scow provided for the purpose, without interrupting the progress of the saw-boat. Mr. Williamson also employed men to go upon the surface of the raft by means of long planks and saw all logs within reach into short lengths.

He says that a saw working down into the water will cut fully twice as fast as when entirely out of water. I am led to recommend stern-wheel boats because of their greater economy in running and less exposure to injury in the raft, as well as on account of the greater deck and side room which they afford. Supposing the plan here submitted to be adopted, it remains to consider the amount of running expenses and the rate at which the work can be done. Estimates of probable cost of boats and machinery and running expenses for one year are appended. Only trial can determine the rate at which any machinery or work can remove the obstructions, and to specify the time in which the method recommended can complete the work would be mere guess-work, or, at best, an estimate based upon uncertain data.

Assuming such data as the survey affords and supposing that the work be carried on under competent and faithful supervision, the estimates which I have made lead me to think it possible to open a navigable channel in one year of work. Work done in clearing the channel from the foot of the raft up would not be lost, even if the whole were not at once completed. If the main river were opened to Red Bayou a choice would be given between the two side routes now in use, at lower stages of water than now required for boats to pass up Black Bayou. The

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channel would gradually improve its capacity for carrying raft, and when the whole of the present raft is disposed of, need not again be allowed to choke up. Suppose the channel entirely open and the supply of drift above not stopped, in the event of any great run of drift appearing in the upper river it might be boomed at some place above Red Bayou, probably above Albon's first canal, or just below Henry's Canal, where it could be destroyed at leisure and stowed in Simpson's Lake. In the mean time, navigation would not be suspended, as there would be a good route from Red Bayou through Posten Bayou, or, better, through Stump-dam Bayou, Kelly Bayou, Scott's Slough, and Kown's Canal. The estimate of work required after the first opening of the channel is still more difficult, and can be based only on judgment as to time that the boats would be kept at work, which would vary with the runs of drift caused by freshets. Ample work for the large boats (double scow and saw-boat) could be found for some years in removing snags throughout the whole length of the navigable river. The saw-boat would be efficient as a snag-boat when not at work on floating raft. The following are estimates of cost of boats, machinery, and work, based on the plans submitted above:

Estimates for machinery and work for removing the Red River raft.

1. One stern-wheel saw-boat, fitted with ten saws on sloping sides and bow, steam-crane, two steam-capstans, with equipage complete	$57,950
2. Flat-boat or scow, to receive water-logged raft from saw-boat	1,000
3. Stern-wheel tow-boat, with steam-capstan and steam-crane, for unloading scow of saw-boat	10,000
4. Double-hull scow, with lifting and sawing apparatus, and small engine for working same	15,000
5. Stern-wheel tow-boat for same, with one steam-capstan, and steam-crane, for unloading water-logged snags	15,000
Total machinery and boats	98,950

Estimate for work for one year.

No. 1 saw-boat, at $5,000 per month	$60,000
No. 3, with No. 2, at $1,000 per month	12,000
Nos. 4 and 5	20,000
Ax and saw party above raft	12,000
Ax and saw party below raft	3,000
Repairs of machinery, 10 per cent. on cost	9,895
Total work and repairs for one year	116,895

Summary for one year.

Boats and machinery	$98,950
Work and repairs	116,895
Contingencies, 20 per cent	43,169
Total	259,014

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Subsequent expense of keeping river clear of raft and improving channel may be estimated, for first year after opening of channel, $50,000. Afterward the expense will decrease rapidly, but for several years the work of destroying raft-material and guarding against jams must continue at an annual expense of from $10,000 to $25,000.

CYPRESS BAYOU.

The survey for improvement of Cypress Bayou includes properly the whole route from Shreveport, Louisiana, to Jefferson, Texas. From Shreveport to the head of Willow Pass, (the upper end of Sodo Lake,) the route is identical with that of boats for the upper river. At this point boats for Jefferson turn to the west into Fairy Lake, and, by a tolerably direct course, in high water, reach the present mouth of Cypress Bayou, west of the Texas line. From the mouth of Cypress Bayou (Bois d'Arc Pass, or the Ox-bows) to Jefferson, a distance of twenty-seven miles, the channel is well defined, and nearly all of the way has banks above water, except in freshets from the valley of this stream or high water of the lakes from Red River overflow. A survey of this bayou, with transit and level lines, has been made and extended across Fairy Lake to the south side, along which it is continued, to connect with the west line of the Red River survey at the head of Willow Pass. The map, as before stated, cannot be furnished with this preliminary report.

The route consists of four distinct divisions, viz:

1. Twelve-mile Bayou, from Shreveport to the foot of Sodo Lake.
2. Sodo Lake to the head of Willow Pass.
3. Fairy Lake to Bois d'Arc Pass or mouth of Cypress Bayou.
4. Cypress Bayou to Jefferson.

Considered as levels in some of which slack-water navigation may be desirable, the division is slightly different. Twelve-mile Bayou is a rapid stream, but deep and crooked, always affording tolerable navigation to Albany, at the foot of Sodo Lake. Sodo Lake may be considered a level for slack-water navigation from Albany to the head of Willow Pass, having a fall in that distance of 1.63 feet at the time of the survey. From Willow Pass the level of Fairy Lake extends throughout the whole lake and up Cypress Bayou to Smithland. From Smithland to Jefferson, a distance of six miles, the water is shoal and more dependent upon the stage of Cypress Bayou above this point than below. The improvements of which the route is susceptible consist of removing stumps and snags, dredging, (which is required near Jefferson,) and giving slack-water navigation in Sodo Lake and Fairy Lake by dams, alone or with locks. In the event of the removal of the raft, I would respectfully recommend building a dam on the lines A B and C D, shown on sketch of the lower end of Sodo Lake, accompanying the sketch of the raft region. It may afterward be found desirable to narrow the water-way at the bluff by extending the dam from the island and main shore. Should these means fail, a lock can be constructed at this point, but if the chute be found to answer it will be cheaper and better. Other possible improvements, in controlling the flow of water into the lakes, will be indicated in the report accompanying the completed map, but as their need will depend upon the ascertained results of a successful removal of the raft, it is not necessary to consider them at present. If the raft be removed, the closing of Dooley's or any western canal or bayou above it should be prohibited, both as a measure of safety for the plantations on Red River below the raft and for the benefit of the lake and bayou navigation to Jefferson.

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While at Jefferson, I was assured by the mayor that the city dredge would be placed at the disposal of the Government, if any appropriation were made to run it. The dredge is a very powerful one, by Atkins & Burgess, Chicago, and in good order. It could be employed to advantage on the shoal and narrow channel of Cypress Bayou, between Jefferson and Smithland. From the mouth of Cypress Bayou, in Fairy Lake, the deepest water is not found in the steamboat route, but though a cypress brake near Potter's Point, on a nearly direct line to Rocky Point. This route could be opened at a cost of about $3,000, and would greatly improve navigation at this end of the lake. Many stumps are found in Cypress Bayou, which could be removed with advantage to navigation at small expense. For the dam at foot of Sodo Lake, pile-work will be cheapest, and in the clay bottom at that place can be built securely. In case any pile-work is needed in this region, I would recommend that permission be obtained for the officer or agent in charge of the work to cut timber from the public lands above. In this way only is it probable that the Government will derive any benefit from its timber in this vicinity, which is cut as fast as the market at Shreveport demands. The following estimates for work on the Cypress Bayou route are respectfully submitted:

Estimates.

For work in removing stumps in Cypress Bayou and opening route from Bois d'Arc Pass, through cypress brake, near Potter's Point, it is recommended to build a flat-boat 80 feet long, 20-foot beam, 3-foot hold, and provide it with a small steam-engine suitable for running a saw for cutting up snags or stumps under water, movable shears and lifting apparatus also to be furnished:

Total cost estimated at	$5,000
Cost of running same, with superintendent and eight men living on boat, one year	12,000
Extra cost of opening new route in lake	3,000
	20,000

If the city of Jefferson will furnish dredge, running expenses of same six months, $12,000.

If it be decided to remove the Red River raft: For building dam at foot of Sodo Lake, to contract water-way at low stages, $70,000.

Commercial reports pertaining to Shreveport and Jefferson will be furnished in the completed report.

I remain, very respectfully, your obedient servant,

E. A. WOODRUFF,
First Lieutenant of Engineers, U. S. A.

Captain C. W. HOWELL,
Corps of Engineers, U. S. A., New Orleans, Louisiana.

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42D CONGRESS, 2d Session. | SENATE. | EX. DOC. No. 72.

LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In compliance with a resolution of the Senate of April 1, 1872, statements from the commandants of the armories at Springfield, Massachusetts, and Rock Island, Illinois, showing the operation of the eight-hour law.

MAY 13, 1872.—Referred to the Committee on Education and Labor and ordered to be printed.

WAR DEPARTMENT, *May* 13, 1872.

The Secretary of War has the honor, in reply to a resolution of the United States Senate of the 1st ultimo, "That the Secretary of War be directed to procure from the commandant of the armory at Springfield, Massachusetts, and the commandant of the armory at Rock Island, Illinois, comparative statements showing the operation of the eight-hour law, in respect to the amount of labor performed, expense in the manufacture and repair of arms, and the general working of those establishments as compared with the former system of working ten hours per day," to transmit to that body the reports therein called for.

WM. W. BELKNAP,
Secretary of War.

ORDNANCE OFFICE, WAR DEPARTMENT,
Washington, May 13, 1872.

SIR: I have the honor to return herewith Senate resolution directing the Secretary of War to procure from the commandants at Springfield, Massachusetts, and Rock Island, Illinois, a comparative statement showing the operations of the eight-hour law, &c., and with it is respectfully submitted the reports of the commanding officers of Rock Island arsenal and Springfield armory, dated 22d ultimo and 9th instant, respectively.

By order of Chief of Ordnance.

Very respectfully, your obedient servant,

S. V. BENÉT,
Major of Ordnance.

Hon. W. W. BELKNAP,
Secretary of War.

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ORDNANCE OFFICE, WAR DEPARTMENT,
Washington, April 3, 1872.

SIR: You will please forward to this office, as soon as possible, the information called for in the following resolution, viz:

IN THE SENATE OF THE UNITED STATES, *April* 1, 1872.

Resolved, That the Secretary of War be directed to procure from the commandant of the armory at Springfield, Massachusetts, and the commandant of the armory at Rock Island, Illinois, comparative statements, showing the operation of the eight-hour law in respect to the amount of labor performed, expense in the manufacture and repair of arms, and the general working of those establishments as compared with the former system of working ten hours per day.

Attest:

GEO. C. GORHAM,
Secretary.

By order of the Chief of Ordnance.
Respectfully, your obedient servant,

S. V. BENÉT,
Major of Ordnance.

COMMANDING OFFICER,
Rock Island Arsenal.

ORDNANCE OFFICE, WAR DEPARTMENT,
WASHINGTON, *April* 3, 1872.

SIR: You will please forward to this office, as soon as possible, the information called for in the following resolution, viz:

IN THE SENATE OF THE UNITED STATES, *April* 1, 1872.

Resolved, That the Secretary of War be directed to procure from the commandant of the armory at Springfield, Massachusetts, and the commandant of the armory at Rock Island, Illinois, comparative [statements, showing the operation of the eight-hour law in respect to the amount of labor performed, expense in the manufacture and repair of arms, and the general working of those establishments as compared with the former system of working ten hours per day.

Attest:

GEO. C. GORHAM,
Secretary.

By order of the Chief of Ordnance.
Respectfully, your obedient servant,

S. V. BENÉT,
Major of Ordnance.

COMMANDING OFFICER,
Springfield Armory.

ROCK ISLAND ARSENAL, ILLINOIS,
April 22, 1872.

SIR: I have the honor to acknowledge the receipt of your letter of the 3d instant, transmitting the following resolution, viz:

IN THE SENATE OF THE UNITED STATES, *April* 1, 1872.

Resolved, That the Secretary of War be directed to procure from the commandant of the armory at Springfield, Massachusetts, and the commandant of the armory at Rock Island, Illinois, comparative statements, showing the operation of the eight-hour law in respect to the amount of labor performed, expense in the manufacture and repair of arms, and the general working of those establishments as compared with the former system of working ten hours per day,

and directing me to send the information called for to you.

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Amount of labor performed when working eight hours per day, compared with amount of labor performed when working ten hours per day at

ROCK ISLAND ARSENAL.

The operation of the eight-hour system at this arsenal has shown that generally a man who works eight hours per day performs only eight-tenths as much labor as the same man would do if he worked ten hours per day; that is, that the same man performs no more labor in one hour, when he works eight hours per day, than he would do in the same hour if he worked ten hours per day. I have stated that this is generally true.

I believe it was expected that under the eight-hour system employés would work more willingly, more intelligently, and with more strength and dispatch than under the ten-hour system; and that therefore enough more work would be done per hour to compensate, or partially compensate, to the Government for the loss of two hours' work. This expectation has not been realized at this arsenal, and in this respect the above statement respecting the comparative amount of work performed under the two systems is entirely true.

In some cases it has been necessary to employ workmen "extra time." In such cases they have generally worked ten hours per day, and, in accordance with the law, they then received pay for one and one-quarter days' work; such workmen perform as much labor, and do it as well, in the additional two hours as in any other two hours of the day.

But the Government gives ten hours' pay for eight hours' work, or 25 per cent. more than is paid by private parties in the neighborhood; and this enables us to select our skilled workmen, and gives us better control over laborers. The laborer is afraid of being discharged, because he could not get so good pay elsewhere. For this reason we get a little more labor performed per hour than we would under the ten-hour system.

I estimate the value of a day's labor under the eight-hour system to be 83⅓ per cent of that under the ten-hour system, including all kinds of labor.

Comparative cost of the operations at the Rock Island arsenal under the eight-hour and ten-hour per day systems of labor.

In erection of buildings the expenditure for labor (under the eight-hour system) is always about the same as the expenditure for materials. This makes the labor on a building cost 20 per cent. more than under the ten-hour system, and the building itself 10 per cent. more than under the ten-hour system.

In the work on the Rock Island arsenal water-power 82½ per cent. of the expenditure has been for labor. This has made the cost of the work under the eight-hour system 16½ per cent. more than under the ten-hour system.

This last estimate may be taken as a fair one for the other principal operations of this arsenal, such as building of sewers, roads, avenues, grading and improvement of grounds, and care and preservation of buildings.

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ADVANTAGES AND DISADVANTAGES OF THE EIGHT-HOUR PER DAY SYSTEM.

Advantages.—1st. I have already stated that it was expected that men who worked eight hours per day would be able and willing to perform more work per hour than the same men could and would do if they worked ten hours per day, and that this expectation has not been realized to any considerable extent.

2d. Because the Government pays a higher price per hour than other parties, we are able to command the services of all the workmen we require, whether skilled or laborers, without great trouble. For the same reason all workmen are afraid of being discharged, and this gives us a good and easy control over our workmen—particularly over laborers.

3d. It has been claimed that, if men worked only eight hours per day, the additional leisure time allowed them would generally be devoted to reading and study, and otherwise to the benefit of their social, moral and mental condition, thereby making them better and more valuable workmen and citizens. I believe this expectation has been partially realized, at this arsenal, in the case of carpenters and mechanics; that it has not been realized, to any considerable extent, in the case of masons and stone-cutters; and that the leisure time has been generally an injury, rather than a benefit, in the case of laborers. Those in the latter class have generally no houses of their own, and the leisure time in most cases is more productive of bad habits than of good.

Disadvantages.—1st. The fact that the Government pays higher wages per hour than other establishments in the neighborhood of this arsenal must and does disturb the wages of labor in this vicinity. It induces workmen to leave their employers and seek positions at the arsenal, only for the sake of increased wages. It induces workmen to lie idle while seeking or waiting for work at this arsenal, thereby losing the country valuable labor. It leads to an increase of wages by private establishments in order to obtain and hold their workmen, and, as the Government must pay the same wages per diem that other parties do, the tendency is to increase the price of labor beyond its natural price, as determined by the natural law of supply and demand.

2d. The principal operations of this arsenal, since the passage of the eight-hour law, have been and are now connected with the erection of buildings. The season for economical work of this kind is short. Workmen have, therefore, sometimes been crowded, when a less number, working more hours, would have done the work with more advantage. This has been the case, particularly in foundation work, on the water-power, where the stage of water makes the season very short, and in shop-work. It has often been necessary, on this account, to work two hours extra time each day, and pay workmen for such extra time. Some classes of workmen refuse to work extra time, being governed, sometimes, I believe, by the rules of trades-unions, that think extra-time work will destroy the eight-hour system, and under the law they cannot be required to work more than eight hours. The work of each class of workmen is dependent upon and must progress with that of some or all of the other classes. When one class of workmen refuse to work extra time, others cannot generally be employed extra time with advantage, and a desirable and (for economy) even necessary progress of the work is prevented. About $8,500 has been paid at this arsenal for extra-time work in the last year.

3d. For the performance of a fixed amount of work, under the eight-hour system, an outlay of 20 per cent. more for tools and machinery is

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required than under the ten-hour system. (The reason why this is 20, and not 25, per cent. is explained on the fourth page of this report.) Also the cost of running a steam-engine, machinery, and shop fixtures eight hours per day is not much less than the cost of running the same ten hours per day.

4th. It has been frequently reported to me that laborers and teamsters, with their teams, who have worked eight hours at the arsenal, have regularly, after 4 o'clock, worked from two to three hours for other parties, thereby depriving the United States of all benefit that could result from the eight-hour system.

Very respectfully, your obedient servant,

D. W. FLAGLER,
Captain of Ordnance, Brevet Lieutenant Colonel, U. S. A.,
Commanding.

CHIEF OF ORDNANCE,
Washington, D. C.

P. S.—The delay in furnishing this report has been caused by my absence from my post.

NATIONAL ARMORY,
Springfield, Massachusetts, May 7, 1872.

SIR: In reply to your letter of April 3, 1872, transmitting a resolution of the United States Senate of April, 1872, I have to make the following report:

Most of the arms made at this armory since the introduction of the eight-hour system differ in model from those previously made under the ten-hour system. A statement of the cost of these arms would not, therefore, furnish reliable data for comparing the loss or gain by changing the length of the working-day from ten to eight hours.

The only points upon which accurate and reliable information can be given are:

1. The actual amount of coal and gas saved by reducing the day from ten to eight hours.

2. The comparative cost of cleaning Enfield rifle-muskets, (see statement J.)

3. The average wages of piece workmen engaged on operations which were the same or similar under the two systems, (see statements L, M, and N.)

The number of workmen employed during each quarter, from 1866 to 1872, and the number and kind of arms made, cleaned, and repaired, &c., are shown in statement marked O, (appended.)

The amount of coal required for the steam-engine, which furnishes motive-power, is, ordinarily, 3,000 pounds for ten hours. For the eight-hour day, only 2,400 pounds are required, making a saving of $3 in cost for motive-power. Statement K shows that, on an average of two months, 142 bushings, or, what would amount to the same thing, barrels, were rolled in ten hours, with 3,619 pounds of coal, and that, on an average of the same time, 140 bushings were rolled in eight hours, with 2,943 pounds of coal, making a saving of 676 pounds of coal, and nearly an equal amount of work done.

The saving in hard coal for the smiths' forges, for the eight-hour day, is found, from careful estimate, to be 500 pounds per day.

The money value of coal saved for motive-power, barrel-furnace, and smith-forges is, therefore, $8 per day.

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As it is found necessary to keep the shops warm both night and day in the winter, the saving of coal by the eight-hour system, for heating purposes, amounts to little or nothing.

A careful calculation shows that an average saving of about $500 per year for gas, for lighting-purposes, is effected by reducing the number of hours from ten to eight, which saving is principally in the short days of the winter months. The total saving in coal and gas is, therefore, $2,900 per year of 300 working-days, in favor of the eight-hour system, about equal to three workmen for the same time.

Statements L, M, and N show the average daily wages earned by various piece workmen on the same or similar jobs, under the ten and eight-hour systems, respectively. These statements refer to the regular standard work of the armory in the manufacture of breech-loading muskets, and, it is thought, afford the best data that can be obtained for judging of the effect of the ten and eight hour systems on the productions of piece workmen.

On account of the variable nature and amount of the work done before and after the introduction of the eight-hour system, (some sixteen different models of guns having been worked on since the close of the war) it is found impossible to give any accurate and reliable data regarding the cost of work by day workmen under the two systems, except, perhaps, that it is believed that the rates of foremen, assistant foremen, inspectors, helpers, policemen, &c., to the piece workmen, was not materially affected by the reduction in the length of the working-day.

Very respectfully, your obedient servant,

J. G. BENTON,
Major of Ordnance, Commanding.

CHIEF OF ORDNANCE,
United States Army, Washington, D. C.

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Names.	Date.	Component.	Operation.	Tariff.	Days.	Average. General.	Average. Mean.	Present tariff.	Remarks.
A. H. Taylor	January, 1867	Ramrods	First drilling	$0. 03	27 8-10	$2 99		$0. 02	
	February, 1867	do	do	.03	21 7-10	3 34		.02	Days of 10 hours.
	March, 1867	do	do	.03	16 6-10	3 45	$3 26	.02	
A. H. Patterson	August, 1871	do	do	.02	7 4-8	2 99		.02	
	September, 1871	do	do	.02	17 7-8	2 97		.02	Days of 8 hours.
	October, 1871	do	do	.02	13 5-8	3 09	3 02	.02	
William Bradbury	July, 1867	do	First straightening	.008	27	3 27		.036	
	August, 1867	do	do	.008	4 5-10	3 30		.006	Days of 10 hours.
	September, 1867	do	do	.008	4	3 29	3 28	.006	
Z. R. Chapman	July, 1871	do	do	.006	2	3 00		.006	
	August, 1871	do	do	.006	4 6-8	3 00		.006	Days of 8 hours.
	November, 1871	do	do	.006	7	3 09	3 03	.006	
John Bennett, jr	March, 1865	Barrels	Turning	.018	22	2 92		.009	
	April, 1865	do	do	.018	19	2 70		.009	Days of 10 hours.
	May, 1865	do	do	.018	23 1-2	3 19	2 93	.009	
E. W. Clark	June, 1869	do	do	.02	11 3-8	2 97		.009	Improved quality of work.
	July, 1869	do	do	.02	10 1-8	2 90		.009	Speed of lathes reduced.
	August, 1869	do	do	.02	24 5-8	3 00	2 96	.009	Days of 8 hours.
Michael Egan	October, 1864	do	First boring	.0125	21	2 42		.0235	Tools repaired by machinist.
	November, 1864	do	do	.0125	20 9-10	2 53		.0235	Days of 10 hours.
	December, 1864	do	do	.0125	22 9-10	2 61	2 52	.0235	
	July, 1869	do	do	.0235	23 3-8	3 02		.0235	Tools repaired by machinist.
	August, 1869	do	do	.0235	22 3-8	3 03		.0235	Days of 8 hours.
	September, 1869	do	do	.0235	22 2-8	3 01	3 02	.0235	
D. W. Barlow	May, 1865	do	Second boring	.11	24 1-2	3 09		.11	
	June, 1865	do	do	.11	20	3 02		.11	Days of 10 hours.
	July, 1865	do	do	.11	17 1-2	2 92	3 01	.11	
Silas Phelps	June, 1869	do	do	.11	24 1-8	3 06		.11	
	July, 1869	do	do	.11	23	3 13		.11	Days of 8 hours.
	August, 1869	do	do	.11	24 6-8	3 08	3 09	.11	
Walter Bates	June, 1865	do	Third boring	.045	17 3-4	3 26		.03	
	July, 1865	do	do	.045	15 1-2	3 01		.03	Days of 10 hours.
	August, 1865	do	do	.045	20	3 27	3 18	.03	
	June, 1869	do	do	.03	18 6-8	3 07		.03	
	July, 1869	do	do	.03	18 1-8	3 11		.03	Days of 8 hours.
	August, 1869	do	do	.03	20 3-8	3 12	3 10	.03	
A. H. Johnson	September, 1865	do	Fourth boring	.06	21 1-2	3 22		.02	
	October, 1865	do	do	.06	20 1-4	3 15		.02	Days of 10 hours.
	November, 1865	do	do	.06	23 1-2	3 31	3 22	.02	
	June, 1869	do	do	.05	22	3 00		.02	
	July, 1869	do	do	.05	21 5-8	3 08		.02	Days of 8 hours.
	August, 1869	do	do	.05	22 2-8	3 00	3 02	.02	

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K.—*Cumberland coal used for welding bushings during the ten and eight hour systems.*

Date.	Bushings welded.	Coal used.	Number of days.	Bushings per day.	Coal used per day.	Average per day.	Hours
						Pounds.	
May, 1868	3,416	82,273	24	142	3,678	3,619	10
June, 1868	3,319	83,276	23 4-10	142	3,556		10
Sept., 1868	3,128	65,397	22 3-8	140	2,922	2,943	8
Oct., 1868	3,354	70,719	23 7-8	140	2,962		8

J.—*Cost of repairing Enfield arms.*

Quarter ending—	Number.	Labor.	Materials.	Remarks.
Dec. 31, 1867	5,043	$7,352 81	$1,257 13	This statement shows that the cost of labor and material for cleaning and repairing 74,237 Enfield rifle-muskets under the ten-hour system was $74,645.02, nearly $1 each, and that the cost of repairing 72,670 of the same kind of arms under the eight-hour system was $68,170.25, or nearly 93 cents each. A reference to the tariff prices for this kind of work, marked E, shows that the cost of several of the operations were reduced under the eight-hour system, by the introduction of machinery, simplification of work, &c., and it would be proper to take these into account in comparing the cost under the two systems.
Mar. 31, 1868	45,326	41,281 15	4,681 96	
June 30, 1868	23,868	20,085 48	986 49	
Sept. 30, 1868	1,009	725 09	2 00	
Dec. 31, 1868	.....	7 20	.....	
Mar. 31, 1869	.....	81 30	.....	
June 30, 1869	.....	913 30	.....	
Sept. 30, 1869	15,940	17,913 81	1,491 39	
Dec. 31, 1869	14,860	10,243 02	571 44	
Mar. 31, 1870	4,080	2,551 70	629 39	
June 30, 1870	1,386	141 02	.....	
Mar. 31, 1871	7,394	9,394 98	1,390 69	
June 30, 1871	22,001	20,663 52	1,623 72	
Total	146,907	131,354 38	11,634 21	

NOTE.—17,321 pounds of parts of the Enfield guns were repaired and turned over to the ordnance store-keeper June 30, 1871, at 10 cents per pound.

E.—*Names of the piece jobs upon which the report of September, 1868, was based; also, tariff on the same branches in June, 1868, and as it now stands on the books for 1872.*

FILING-SHOP.

Name.	Tariff June, 1868; ten hours.	Tariff January, 1872; eight hours.	Remarks.
Repairing old arms:			
Assembling locks	$0.037	$0.03	
Finishing stocks	.252	.10	New operation; work done by machinery, formerly done by hand.
Sand-polishing stocks	.0	.024	
Finishing sight-bases	.013	.012	
Dismounting guards	.0028	.004	
Dismounting sights	.0014	.00187	
Finishing vents and cones	.0035	.0035	
Finishing sight-leaves	.0081	.0075	
Finishing guard-bow swivels	.018	.009	
Repairing guard-bow swivels	.0051	.0051	
Repairing middle bands	.0051	.0051	
Repairing upper bands	.0042	.0042	
Repairing lower bands	.0042	.0042	
Rotary filing barrels	.012	.012	
Finishing lock-plates	.0027	.0027	
Bushing barrels	.029	.029	
Finishing middle bands	.017	.008	Change in model.
Dismounting screw-drivers	.0044	.0025	Filing omitted.
Finishing barrels	.076	.0985	
Cleaning stocks	.026	.026	
Varnishing stocks	.0093	.0093	
Assembling muskets	.03	.03	
Assembling sights, (musket 1861)	.0186	.0185	
Spencer arms:			
Dismounting arms	.06	.06	
Dismounting carrier-blocks	.005	.005	
Dismounting locks	.0044	.0044	
Dismounting inner tubes	.0071	.0071	

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E.—*Names of the piece jobs, &c.*—Continued.

Name.	Tariff June, 1868; ten hours.	Tariff January, 1872; eight hours.	Remarks.
Spencer arms—Continued.			
Filing and assembling butt-plates	$0.03	$0.03	
Assembling carrier-blocks	.067	.067	
Filing hammers	.012	.012	
Assembling arms	.223	.223	
Assembling screw-drivers	.0084	.0084	
Assembling buttons	.102	.102	
Assembling locks	.036	.036	
Spencer carbines:			
Finishing butt-stocks, (new)	.11	.11	
Spencer arms:			
Filing buttons	.0305	.0805	
Repairing arms:			
Furnishing tip-stocks	.075	.075	
Repairing Enfields:			
Furnishing stocks	.10	.061	Work done by machinery, formerly done by hand.
Dismounting muskets	.024	.024	
Dismounting and stamping locks and triggers	.0195	.0195	
Screw-drivers:			
Jigging blades, altered S. S. D	.02	.02	
Filing blades, altered S. S. D	.022	.022	
Assembling screw-drivers, altered S. S. D	.0084	.0084	
Forging blades, altered S. S. D	.006	.006	
Polishing blades, altered S. S. D	.0064	.0064	
Total	1.6061	1.43467	

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O.—*Number of men employed and the principal operations at the Springfield Armory, from January 1, 1867, to January, 1872.*

Quarter ending—	Average number employed.	Breech-loading rifle-muskets.								Repaired arms.	Appendages made and repaired.	Arm-chests.	Labor on swords repaired.	Remarks.
		Model, 1866.	Model, 1868.	Model, 1870.	Remington.	Cadet model, 1869.	Spencer.	Sharp's.	Navy Remington rifle.					
March 30, 1867	1,067	7,325	.....	.....	.....	.....	.....	.....	.....	17,843	29,085	1,408	.....	The eight-hour system went into operation on the 13th July, 1868.
June 30, 1867	1,127	15,755	.....	.....	.....	.....	.....	.....	.....	14,871	30,128	1,163	.....	
Sept. 30, 1867	1,047	20,421	.....	.....	.....	.....	.....	.....	.....	12,167	28,592	383	.....	
Dec. 31, 1867	768	6,256	.....	.....	.....	.....	.....	.....	.....	20,233	14,648	1,185	7,305	
March 31, 1868	638	847	.....	.....	.....	.....	.....	.....	.....	53,487	17,081	2,747	3,297	
June 30, 1868	493	.....	.....	.....	504	.....	.....	.....	.....	32,941	33,160	1,681	3,311	
Sept. 30, 1868	390	.....	.....	.....	*498	.....	.....	.....	.....	11,079	6,909	1,270	4,314	
Dec. 31, 1868	351	1,003	.....	.....	.....	.....	.....	.....	.....	129	25,867	491	2,540	
March 31, 1869	371	.....	11	.....	.....	.....	.....	.....	.....	120	13,779	748	5,480	
June 30, 1869	441	796	7	.....	.....	.....	.....	.....	.....	.....	5,299	104	3,854	
Sept. 30, 1869	547	500	3,764	.....	*500	2	.....	.....	.....	15,940	4,584	.....	3,990	
Dec. 31, 1869	651	.....	11,711	.....	.....	.....	.....	.....	.....	33,020	13,055	.....	.....	
March 31, 1870	688	.....	14,603	.....	.....	310	.....	.....	.....	29,460	35,886	.....	264	
June 30, 1870	625	.....	15,350	.....	.....	.....	.....	.....	.....	17,271	20,329	.....	.....	
Sept. 30, 1870	492	.....	4,332	.....	†1	.....	.....	†1	.....	270	9,107	.....	.....	
Dec. 31, 1870	585	.....	366	†550	.....	.....	.....	.....	2,011	25,226	6,355	103	.....	
March 31, 1871	676	.....	2,006	†470	†1,000	3	.....	†500	8,163	36,276	21,151	647	.....	
June 30, 1871	670	1	6	‡962	.....	1,530	.....	.....	11,839	30,050	9,474	686	.....	
Sept. 30, 1871	325	.....	.....	†1	†7	1,492	§100	†500	.....	1,581	500	59	.....	
Dec. 31, 1871	352	.....	.....	1,901	.....	65	§1,000	.....	.....	2,964	16,034	.....	.....	

* Cadet. † For trial. ‡ Trial carbines. § Converted from carbines.

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... ten and eight hour systems.

FILING-SHOP.

Names.	Date.	Component.	Operations.	Tariff.	Wages.	Time.	Ave'ge wages.	Present tariff.	Remarks.
F. Lee	March, April, and May, 1865	Mainspring swivels	Filing	$0.0152	$96 40	293-4	$3 29	$0.015	10 hours.
D. E. Childs	March, 1872	do	do	.015	16 10	5	3 22	.015	8 hours.
B. S. Haskins	January and February, 1872	do	do	.015	31 18	9 5-8	3 24	.015	8 hours.
F. G. Southmayed	March, 1872	do	do	.015	10 92	32-8	3 36	.015	8 hours.
W. H. Lacy	February, March, and April, 1865	Band-springs	First filing	.0009	71 93	333-4	2 16	.0008	10 hours.
G. F. Anderson	February and March, 1865	do	do	.0009	47 04	24	1 96	.0008	10 hours.
J. A. Hartman	August and November, 1871	do	do	.0008	8 20	9 5-8	85	.0008	8 hours.
H. Westfall	December, 1871	do	do	.0008	2 26	1 4-8	1 51	.0008	8 hours.
E. Coman	June, July, and August, 1867	do	Straightening	.0008	45 41	132-10	3 44	.....	10 hours.
C. W. Briggs	August, September, and October, 1865	do	do	.0008	40 59	123-4	3 30	.....	10 hours.
W. C. Healey	July and September, 1871	do	Straightening and adjusting	.0016	28 39	9 5-8	2 95	.0016	8 hours.
A. Vining	October, November, and December, 1867	do	Second milling	.0023 .00256 .0024	59 78	179-10	3 34	.0024	10 hours.
G. T. Weaver	September, October, and November, 1871	do	do	.0024	38 89	126-8	3 05	.0024	8 hours.
E. Renney	January, 1872	do	do	.0024	3 12	1 1-8	2 08	.0024	8 hours.
A. R. Carlton	January, 1872	do	do	.0024	1 12	3-8	3 00	.0024	8 hours.
E. Coman	October, November, and December, 1867	do	Burring	.0009 .0008 .00074	22 82	7	3 26	.0007	10 hours.
G. F. Anderson	April, May, and June, 1865	do	do	.0009	20 65	6 1-2	2 43	.0007	10 hours.
J. A. Hartman	September and November, 1871	do	do	.0007	5 76	1 5-8	3 55	.0007	8 hours.
E. Renney	January and February, 1872	do	do	.0007	3 39	1 3-8	2 47	.0007	8 hours.
G. T. Weaver	February, 1871	do	do	.0007	1 78	4-8	3 56	.0007	8 hours.
O. U. Wood	July, August, and September, 1867	do	Third milling	.0011	32 42	10 1-10	3 21	.001	10 hours.
Do	September, 1870	do	do	.001	6 37	2 1-8	3 00	.001	8 hours.
S. Warner	October, November, and December, 1867	do	Third filing	.0042 .0039	12 73	67-10	1 90	.0039	10 hours.
F. Pellet	March, April, and May, 1866	do	do	.0042	201 69	535-10	3 77	.0039	10 hours.
J. R. Young	February and March, 1872	do	do	.0039	21 48	6 4-8	3 15	.0039	8 hours.
H. Westfall	September and November, 1871	do	do	.0039	28 08	8 5-8	3 26	.0039	8 hours.
G. T. Weaver	October, 1870	do	do	.0039	56 00	17 4-8	3 20	.0039	8 hours.
H. Hutchinson	September, October, and November, 1865	do	Setting	.00065	28 40	9 3-10	3 05	.0006	10 hours.
R. P. Bardwell	July and August, 1865	do	do	.0008	20 77	6 1-4	3 35	.0006	10 hours.
G. H. Frink	September, 1867	do	do	.00065	18 62	6 7-10	2 78	.0006	10 hours.
G. T. Weaver	December, 1871; Jan. and Feb., 1872	do	do	.0006	6 16	2 1-8	2 90	.0006	8 hours.
H. Hutchinson	May, 1871	do	do	.00065	1 33	3-8	3 67	.0006	8 hours.
J. Bates	January, February, and March, 1868	do	Polishing	.004	56 32	25 6-10	2 20	.00368	10 hours.
Do	April, May, and June, 1871	do	do	.0037	109 72	35 5-8	3 08	.00368	8 hours.
W. C. Kirby	October, November, and December, 1871	do	do	.00368	26 97	8 7-8	3 04	.00368	8 hours.
R. D. Carlton	July, August, and September, 1867	Ejector-studs	do	.0029	74 94	23 2-10	3 23	.0029	10 hours.
E. Crowl	January, February, and March, 1872	do	do	.0029	17 86	5 7-8	3 04	.0029	8 hours.

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L.—*Comparative wages of workmen engaged upon similar operations under the ten and eight hour systems.*

MILLING-SHOP.

Names.	Date.	Component.	Operation.	Tariff.	Wages.	Time.	Average wages.	Present tariff.	Remarks.
						Days.			
J. J. Dillon	July, 1867	Breech-blocks, M. 66	First milling	$0.01	$78 65	24.2			
	August, 1867		do	.01	65 25	20.1			
	September, 1867		do	.01	36 00	11			
					179 90	55.3	$3 27		10 hours.
H. S. Hill	January, 1870	Breech-blocks, M. 68	First milling	.0125	72 13	23 7-8		$0.012	
	February, 1870		do	.0125	21 13	7			
	March, 1870		do	.0125	72 90	23 7-8			
					166 16	54 6-8	3 03		8 hours.
H. M. Thompson	July, 1867	Breech-blocks, M. 66	Second milling	.018	88 72	27.3			
	August, 1867		do	.018	68 87	19.6			
	September, 1867		do	.018	76 90	24			
					234 49	70.9	3 30		10 hours
H. M. Thompson	January, 1870	Breech-blocks, M. 68	Second milling	.022	74 40	24 3-8		.02	
	February, 1870		do	.022	51 22	16 2-8			
	March, 1870		do	.022	79 42	26 3-8			
					205 04	67	3 06		8 hours.
H. M. Richards	July, 1867	Breech-blocks, M. 66	First profiling	.0123	66 92	23.2			
	August, 1867		do	.0123	62 52	20.7			
	September, 1867		do	.0123	65 50	22.2			
					194 94	66.1	2 95		10 hours.
H. M. Richards	January, 1870	Breech-blocks, M. 68	First profiling	.0142	60 26	20 6-8		.0142	
	February, 1870		do	.0142	62 13	21 5-8			
	March, 1870		do	.0142	70 26	24 2-8			
					192 97	66 1-8	2 89		8 hours.

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M. Read	July, 1867	Breech-blocks, M. 66	Second profiling	.014	78 53	24.4			
	August, 1867	do	do	.014	66 39	18.5			
	September, 1867	do	do	.014	75 21	22.9			
					220 06	65.8	3 34		10 hours
M. Holcomb	January, 1870	Breech-blocks, M. 68	Second profiling	.0142	63 49	20 7-8		.0142	
	February, 1870	do	do	.0142	63 03	20 5-8			
	March, 1870	do	do	.0142	70 56	23 2-8			
					197 08	64 6-8	3 04		8 hours.
A. W. Rice	July, 1867	Breech-blocks, M. 66	Third profiling	.0088	94 16	28.9			
	August, 1867	do	do	.0088	57 72	16.6			
	September, 1867	do	do	.0088	41 37	12.6			
					193 25	58.1	3 32		10 hours.
S. S. Holmes	January, 1870	Breech-blocks, M. 68	Third profiling	.0082	38 24	12 4-8		.0082	
	February, 1870	do	do	.0082	35 99	12			
	March, 1870	do	do	.0082	41 00	13 6-8			
					115 23	38 2-8	3 01		8 hours.
E. J. Lyman	July, 1867	Breech-blocks, M. 66	Fifth profiling	.0075	28 87	9			
	August, 1867	do	do	.0075	48 95	13.1			
	September, 1867	do	do	.0075	36 29	11.4			
					114 11	33.5	3.40		10 hours.
S. Leonard	January, 1870	Breech-blocks, M. 68	Fifth profiling	.0075	1 83	1		.0075	
	February, 1870	do	do	.0075	32 78	11			
	March, 1870	do	do	.0075	35 49	12 1-8			
R. R. Brown	January, 1870	do	do	.0075	62 14	20 3-8			
					132 24	44 4-8	2 97		8 hours.
H. L. Weaver	July, 1867	Breech-block caps, M. 66	First milling	.0037	27 19	8.5			
	August, 1867	do	do	.0037	12 63	4			
	September, 1867	do	do	.0038	2 49	.8			
H. E. West	July, 1867	do	do	.0037	1 43	.5			
					43 74	13.8	3 17		10 hours.

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L.—*Comparative wages of workmen engaged upon similar operations under the ten and eight hour systems*—Continued.

Names.	Date.	Component.	Operation.	Tariff.	Wages.	Time.	Average wages.	Present tariff.	Remarks.
						Days.			
F. Chillingworth	January, 1870	Breech-block caps, M. 68	First milling	$0.0047	$23 25	9 6-8		$0.0037	
	February, 1870		do	.0047	23 94	9 6-8			
	March, 1870		do	.0047	14 64	7 4-8			
					61 83	27	$2 29		8 hours.
H. E. West	July, 1867	Breech-block caps, M. 66	Second milling	.0037	1 44	.5			
H. L. Weaver	July, 1867		do	.0037	27 01	8.3			
	August, 1867		do	.0037	*2 69	4			
	September, 1867		do	.0038	2 52	.8			
					43 66	13.6	3 21		10 hours.
F. Chillingworth	January, 1870	Breech-block caps, M. 68	Second milling	.0047	26 32	9 5-8		.0037	
	February, 1870		do	.0047	24 68	9 2-8			
	March, 1870		do	.0047	14 19	7 5-8			
					65 19	26 4-8	2 46		8 hours.
H. E. West	July, 1867	Breech-block caps, M. 66	Drilling	.0075	98 20	29.9			
	August, 1867		do	.0075	22 84	7.6			
H. W. Porter	September, 1867		do	.0075	36 88	11.3			
					157 92	48.8	3 23		10 hours.
A. Phillips	February, 1870	Breech-block caps, M. 68	Drilling	.0075	23 80	8 6-8		.0075	
	March, 1870		do	.0075	15 76	6 1-8			
					39 56	14 7-8	2 87		8 hours.
J. M. Thompson	July, 1867	Breech block caps, M. 66	Profilling	.0075	77 78	23. 8			
	August, 1867		do	.0075	45 90	15			
	September, 1867		do	.0075	40 76	12.5			
					164 50	51.3	3 20		10 hours.

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	March, 1870	do	do	.011	62 14	20 3-8		.0105	
			do	.011	49 51	15 7-8			
			do	.011	47 67	15 6-8			
					159 32	52	3 06		8 hours.
H. E. West	July, 1867	Breech-block caps, M. 66	Countersinking	.0025	7 04	2			
A. Phillips	August, 1867		do	.0025	8 52	3. 4			
	September, 1867		do	.0025	13 15	4. 7			
					28 71	10. 1	2 84		10 hours.
A. Phillips	January, 1870	Breech-block caps, M. 68	Countersinking	.0025	11 66	3 6-8		.0025	
	February, 1870		do	.0025	11 88	3 7-8			
	March, 1870		do	.0025	12 68	4 1-8			
					36 22	11 6-8	3 08		8 hours.
M. Holcomb	July, 1867	Breech-block caps, M. 66	Milling	.0046	20 55	13			
J. P. Cushing	August, 1867		do	.0046	34 12	16. 4			
F. J. Rollins	July, 1867		do	.0046	29 73	12. 7			
G. W. McIntire	July, 1867		do	.0046	33 44	20. 4			
					117 84	62. 5	1 88		10 hours.
S. Van Horn	January, 1870	Breech-block caps, M. 68	Milling	.006	37 58	12 4-8		.006	
	February, 1870		do	.006	25 20	8 5-8			
	March, 1870		do	.006	36 30	12 1-8			
					99 08	33	3 00		8 hours.
J. D. Dexter	July, 1867	Breech-block cap-screws, M. 66.	Slitting	.0006	7 54	2. 4			
	August, 1867		do	.0006	8 99	2. 5			
	September, 1867		do	.0006	4 09	1. 2			
					20 62	6. 1	3 38		10 hours.
M. T. Hitchcock	February, 1870	Breech-block cap-screws, M. 68.	do	.0006	5 25	1 7-8		.0006	
	March, 1870		do	.0006	2 48	7-8			
	April, 1870		do	.0006	1 15	5-8			
					9 88	3 1-8	3 16		8 hours.

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L.—*Comparative wages of workmen engaged upon similar operations under the ten and eight hour systems.*—Continued.

Names.	Date.	Component.	Operation.	Tariff.	Wages.	Time.	Average wages.	Present tariff.	Remarks.
						Days.			
L. G. Dustin	July, 1868	Cam-latches, M. 66	First milling	$0.0031	$31 45	10.8			
	August, 1867		do	.0031	24 25	7			
	September, 1867		do	.0031	34 79	11.7			
					90 49	29.5	$3 07		10 hours.
L. G. Dustin	October, 1869	Cam-latches, M. 68	First milling	.0031	16 59	5 4-8		$0.003	
	November, 1869		do	.0031	14 97	4 7-8			
	December, 1869		do	.0031	3 40	1 1-8			
					34 96	11 4-8	3 03		8 hours.
O. W. Lathrop	August, 1867	Cam-latches, M. 66	Second milling	.0018	9 82	2.5			
	September, 1867		do	.0018	11 09	3.2			
	October, 1867		do	.0018	9 11	2.8			
					30 02	8.5	3 53		10 hours.
L. G. Dustin	October, 1869	Cam-latches, M. 68	Second milling	.0023	12 30	4 1-8		.0021	
	November, 1869		do	.0023	11 11	3 5-8			
	December, 1869		do	.0023	2 52	7-8			
					25 93	8 5-8	3 01		8 hours.
L. G. Dustin	July, 1867	Cam-latches, M. 66	Third milling	.0064	76 50	22.9			
	August, 1867		do	.0064	46 06	13.7			
	September, 1867		do	.0064	18 16	6			
					140 72	42.6	3 30		10 hours.
L. G. Dustin	October, 1869	Cam-latches, M. 68	Third milling	.006	32 10	10 6-8		.0036	
	November, 1869		do	.006	28 92	9 6-8			
	December, 1869		do	.006	6 56	2 5-8			
					67 66	23 1 8	2 92		8 hours.

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J. W. Porter	August, 1867		do	.0013	4 57	1.7			
	September, 1867		do	.0013	2 51	.7			
			do	.0013	5 96	1.8			
					30 39	8.7	3 49		10 hours.
J. W. Porter	October, 1869	Cam-latches, M. 68	Fourth milling	.0014	7 49	2 4-8		.004	
	November, 1869		do	.0014	6 76	2 2-8			
	December, 1869		do	.0014	1 53	4-8			
					15 78	5 2-8	3 00		8 hours.
O. W. Lathrop	August, 1867	Cam-latches, M. 66	Fifth milling	.0021	10 08	2.6			
	September, 1867		do	.0021	9 51	3.0			
	October, 1867		do	.0021	18 85	4.5			
					38 44	10.1	3 81		10 hours.
L. G. Dustin	October, 1869	Cam-latches, M. 68	Fifth milling	.0023	12 31	4 2-8		.0013	
	November, 1869		do	.0023	11 11	3 5-8			
	December, 1869		do	.0023	2 52	1 1-8			
					25 94	9	2 88		8 hours.
J. F. Nealey	July, 1867	Cam-latches, M. 66	Seventh milling	.0078	70 36	20.5			
	August, 1867		do	.0078	51 41	16			
	September, 1867		do	.0074	41 10	13			
					162 87	49.5	3 29		10 hours.
J. W. Porter	October, 1869	Cam-latches, M. 68	Seventh milling	.0072	20 67	6 7-8		.007	
	December, 1869		do	.0072	10 49	3 6-8			
	January, 1870		do	.0072	72	2-8			
					31 88	10 7-8	2 93		8 hours.
William Hamilton	July, 1867	Cam-latch springs, M. 66	Curving	.0065	55 25	17			
	August, 1867		do	.0065	39 00	12			
	September, 1867		do	.0065	66 62	20.5			
					160 87	49.5	3 25		10 hours.

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L.—*Comparative wages of workmen engaged upon similar operations under the ten and eight hour systems*—Continued.

Names.	Date.	Component.	Operation.	Tariff.	Wages.	Time.	Average wages.	Present tariff.	Remarks.
						Days.			
P. Chapin	April, 1869	Cam-latch springs, M. 68	Curving	.006	$1 03	4-8		$0.006	
	May, 1869		do	.006	14 30	5 5-8			
	June, 1869		do	.006	6 08	2			
					21 41	8 1-8	$2 63		8 hours.
A. Phillips	July, 1867	Thumb-pieces, M. 66	Drilling	.0065	70 54	25.7			
	August, 1867		do	.0065	44 19	15			
	September, 1867		do	.0065	27 38	9.8			
					142 11	50.5	2 81		10 hours.
A. Phillips	October, 1869	Thumb-pieces, M. 68	Drilling	.006	25 23	8 6-8			
	November, 1869		do	.006	14 59	5 4-8			
	December, 1869		do	.006	43 80	15 7-8			
					83 62	30 1-8	2 77		8 hours.
O. W. Lathrop	July, 1867	Thumb-pieces, M. 66	Punching	.00345	20 49	5.6			
	August, 1867		do	.00345	17 45	4.9			
	September, 1867		do	.00345	11 86	3			
					49 80	13.5	3 69		10 hours.
O. W. Lathrop	October, 1869	Thumb-pieces, M. 68	Punching	.003	13 00	4		.0026	
	November, 1869		do	.003	11 00	3 4-8			
	December, 1869		do	.029	13 21	4 3-8			
					37 21	11 7-8	3 13		8 hours.
W. C. Auger	July, 1867	Ejector-studs, M. 66	First milling	.0108	13 04	5.7			
J. L. White	July, 1867		do	.0108	85 11	18.7			
	August, 1867		do	.0108	53 36	19.9			
	September, 1867		do	.0108	22 85	7.3			
					144 36	51 6	2 79		10 hours

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	February, 1870		do	.01	41 10	13 5-8		.009	
	March, 1870		do	.01	42 18	13 7-8			
					140 60	46 4-8	3 02		8 hours.
O. N. Wood	August, 1867	Ejector-studs, M. 66	Second milling	.004	26 02	7.8			
	September, 1867		do	.004	9 26	2.8			
G. P. Palmer	November, 1867		do	.004	19 32	5.5			
					54 60	16.1	3 39		10 hours.
O. N. Wood	January, 1870	Ejector-studs, M. 68	Second milling	.0035	15 02	5		.003	
	February, 1870		do	.0035	16 50	5 4-8			
	March, 1870		do	.0035	14 28	4 6-8			
					45 80	15 2-8	3 00		8 hours.
W. L. Rice	July, 1867	Breech-screw, M. 66	Milling	.023	91 65	27.7			
	August, 1867		do	.023	66 52	21.3			
	September, 1867		do	.023	55 20	18.5			
F. G. Rice	July, 1867		do	.023	67 80	20.5			
	August, 1867		do	.023	19 32	6			
					300 49	9.4	3 19		10 hours.
V. R. Bennett	October, 1869	Breech-screw, M. 68	Milling	.02	69 00	22 7-8		.0184	
	November, 1869		do	.02	72 24	24			
	December, 1869		do	.02	78 16	26			
					219 40	72 7-8	3 01		8 hours.
A. Oliver	June, 1867	Breech-screw, M. 66	Filing	.009	53 76	20			
	July, 1867		do	.009	77 36	25.6			
E. Gorman	July, 1867		do	.009	68 40	24.3			
					199 52	69.9	2 85		10 hours.
C. F. Carroll	August, 1869	Breech-screw, M. 68	Filing	.009	31 90	10 5-8		.008	
	September, 1869		do	.009	18 23	5 6-8			
	October, 1869		do	.009	21 25	6 7-8			
					71 38	23 2-8	3 07		8 hours.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 73.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

RECOMMENDING

Legislation in relation to the transportation of immigrants to and within the United States.

MAY 14, 1872.—Read, referred to the Committee on Commerce, and ordered to be printed.

To the Senate and House of Representatives of the United States:

In my message to Congress, at the beginning of its present session, allusion was made to the hardships and privations inflicted upon poor immigrants on shipboard, and upon arrival on our shores; and a suggestion was made favoring national legislation for the purpose of effecting a radical cure of the evil.

Promise was made that a special message on this subject would be presented during the present session should information be received which would warrant it. I now transmit to the two Houses of Congress all that has been officially received since that time bearing upon the subject, and recommend that such legislation be had as will secure, first, such room and accommodations on shipboard as are necessary for health and comfort, and such privacy and protection as not to compel immigrants to be the unwilling witnesses to so much vice and misery; and, second, legislation to protect them upon their arrival at our sea-ports from the knaves who are ever ready to despoil them of the little all which they are able to bring with them. Such legislation will be in the interests of humanity, and seem to be fully justifiable. The immigrant is not a citizen of any State or Territory upon his arrival, but comes here to become a citizen of a great republic, free to change his residence at will, to enjoy the blessing of a protecting Government, where all are equal before the law, and to add to the national wealth by his industry.

On his arrival he does not know States or corporations, but confides implicitly in the protecting arms of the great, free country of which he has heard so much before leaving his native land. It is a source of serious disappointment and discouragement to those who start with means sufficient to support them comfortably until they can choose a residence and begin employment for a comfortable support to find themselves subject to ill-treatment and every discomfort on their passage here, and at the end of their journey seized upon by professed friends, claiming legal right to take charge of them for their protection, who do not leave them until all their resources are exhausted, when they are abandoned in a strange land, surrounded by strangers, without employ-

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ment and ignorant of the means of securing it. Under the present system this is the fate of thousands annually, the exposures on shipboard and the treatment on landing driving thousands to lives of vice and shame who, with proper humane treatment, might become useful and respectable members of society.

I do not advise national legislation in affairs that should be regulated by the States, but I see no subject more national in its character than provision for the safety and welfare of the thousands who leave foreign lands to become citizens of this republic.

When their residence is chosen they may then look to the laws of their locality for protection and guidance.

The mass of immigrants arriving upon our shores, coming as they do on vessels under foreign flags, makes treaties with the nations furnishing these immigrants necessary for their complete protection. For more than two years efforts have been made, on our part, to secure such treaties, and there is now reasonable ground to hope for success.

U. S. GRANT.

EXECUTIVE MANSION, *May* 14, 1872.

REPORT ON IMMIGRATION, AND THE PROPER TRANSPORTATION OF IMMIGRANTS TO AND WITHIN THE UNITED STATES.

WASHINGTON, D. C., *November* 1, 1871.

SIR: Under date of June 22, 1871, I had the honor to receive from the Department the following comprehensive instructions:

> You are authorized to visit those parts of Europe which furnish the larger number of emigrants for this country, for the purpose of ascertaining and reporting upon the character of the emigrants who come to the United States; the accommodations furnished by emigrant-ships; the treatment which the emigrants receive upon the passage; whether the laws of the United States in regard to emigrant-vessels are complied with; and, in fine, to ascertain whether any changes can be made either by legislation or by regulation to facilitate and encourage the emigration of such persons as are calculated to make good citizens of the United States.

In pursuance of these instructions I proceeded to Great Britain and Germany, and subsequently to New York city, to investigate this important subject, and to gather the documents needful to its proper consideration. These documents, consisting in part of the emigration laws of England and of Hamburg and Bremen, as well as the regulations made in pursuance thereof, projects of treaties and of laws and statistical information, will be transmitted with a special report as soon as practicable. For the sake of brevity and perspicuity, I prefer not to encumber the general discussion of the question with a statement of specific, legal, and administrative remedies.

THE PERMANENCY OF THE IMMIGRATION MOVEMENT.

Foremost, as the basis of greater governmental care and further legislation, I place the fact that the immigration movement, to the average number of 250,000 souls per annum, is not temporary, scarcely fluctuating, but permanent. At least for half a century longer, and until our own population has increased to two hundred million, the tide of immigration will flow with the power and regularity of the Gulf Stream. If Ireland and Germany should give a smaller number than hitherto, Austria, all of Southern Europe, Sweden, Norway, England, and the

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Alsatian provinces will fully supply the deficiency, so that we can safely estimate that the annual average will increase to upward of 300,000 souls for the next twenty years.

If this statement is accepted, it follows that the Government of the United States should see to the proper transportation, care, and distribution of this precious tide of humanity, the greater portion of which, upon their arrival, are ignorant of our customs, prices, geography, and also of the English language. If Europe were to present us with 300,000 cattle per year, ample agencies would be employed to secure their proper protection and distribution, but thus far the General Government has done but little to diminish the numerous hardships of an emigrant's position.

Properly cared for and distributed where labor is needed and food is cheap and abundant, and where the immigrant can take hold of and become incorporated in American life, immigration is a blessing alike to the new-comer and to the native citizen; but if they are allowed to be impoverished by swindlers, and compelled to remain in overwhelming numbers in our sea-board cities, where common labor is overabundant, they sink into poverty, wretchedness, and vice, and become a dangerous element to a self-governing republic. Coming from monarchical countries they are less self-reliant than Americans, and need, therefore, until their arrival at their destination, the protecting arm of the General Government, which alone has adequate power and jurisdiction. It is time, therefore, that this colossal yet peaceful people's movement, which changes the very character of the American nation, should become the object of carefully matured legislation.

THE CHARACTER OF THE IMMIGRANTS.

I have made the character of the immigrants my special subject of inquiry, and have availed myself not only of the services of our diplomatic representatives and of State agents, but of every channel of information open to me, both public and private, because the character of these inchoate citizens for industry and integrity is of vast importance to our republic. I have been greatly gratified in finding that the masses of immigrants are composed of the best and most enterprising farmers, mechanics, and laborers. It is true, the great majority are not rich, nor do they belong to the professional classes, but they generally possess some means, (estimated at an average of $120 per head,) and abundance of household goods, are in the prime of life, rugged, honest, peaceful, industrious, and thoroughly trained in their callings. I believe, taking all classes of immigrants, not exceeding four per cent. belong to the dangerous and criminal elements of society, and not exceeding one per cent. are actual and convicted criminals. There is, moreover, quite a stream of return steerage-passengers, who represent, to some extent, the disappointed failures who have vainly tried to live without physical exertions.

I have not been able to obtain evidence that any government has pardoned offenders for other than political crimes on condition that they emigrate to the United States; but that, in the absence of all check and watchfulness on the part of our authorities, the temptation so to do is very great; and that criminals recently from prisons do emigrate, I have no doubt. I believe that a careful, and not merely mechanical, registration of name, age, condition, &c., and a reference to home documents, which every *bona fide* emigrant carries, would go very far toward making it unsafe for criminals to land upon our shores. This official register

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would also be a check upon naturalization frauds, and useful for many purposes. The transportation companies should also be held strictly accountable.

STEERAGE TRANSPORTATION.

I have visited a number of the steamers that carry immigrants from Hamburg, Bremen, Liverpool, and Queenstown, and these lines bring the bulk of emigrants to our shores—transportation by sail ships having greatly diminished, and will shortly cease altogether. Making allowance for the fact that ocean navigation is inconvenient even in the first cabin; that the necessities of the case require that persons unable to pay high prices should be confined to the least possible space consistent with health and good morals, and that for a brief period mankind can endure much discomfort and privation, I am yet very decidedly of the opinion that the present steerage system should be greatly modified or abolished. The food which the steerage passengers receive is generally wholesome and abundant, though there are exceptions even to that. On one of the steamers which recently arrived in New York, the emigrants complained most bitterly that the food was so badly cooked as to be uneatable, and that they had to purchase onions, vinegar, and other little necessaries at extortionate prices. The general treatment which immigrants receive from the chief officers is more conspicuous for its neglect than its severity. And notwithstanding the numerous complaints found in books, pamphets, and papers, I am inclined to exculpate all the great steamship companies from intentional brutality or neglect, and intend to hold the system responsible for the many horrors of the middle passage.

Every European steamer, during the emigrant season, carries as many emigrants as can be stowed away in one of the decks of the front half of the ship, and some English steamers carry passengers on both decks.

The steamers of the Hamburg and Bremen lines carry passengers on the second front deck only, to the number of 400 to 600 on each steamer. A ship which carries its full complement, as they construe the American law—one passenger to each two tons admeasurement—has more passengers between decks than can stand up in the narrow passages at the same time. The sleeping-drawers or berths, each about 22 inches wide—though they should be 24 inches, in accordance with American law—and 6 feet long, are ranged four in a row on either side, and in two tiers in the widest part of the ship, and four on each side in the middle, making sixteen berths in width across the ship below, and sixteen berths above. Therefore, without taking account of trunks, boxes, baskets, bags, and bundles of personal luggage, there are, including partitions, 34 feet of interior space devoted to sleeping-places in two tiers, which, supposing the ship to be 54 feet wide in the clear, in its widest part on the front half would only leave in the two passages 10 feet width and 6 feet length for each sixteen persons to perform all the acts of life for fourteen days. As all the passengers, male and female, young and old, occupy this *one* compartment, compelled to witness all the transactions of life, particularly when for several days seasickness with its frequent retching and vomiting has attacked the majority of the occupants, with the presence of perhaps fifty small children to add to its discomforts, the situation becomes painful and even horrible. Should cholera, small-pox, or any other contagious disease attack the passengers, it would rage with the violence of the Chicago fire.

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The effect of this forced association upon the chastity of the female passengers is very bad. It is true a compartment is provided for single unattended females who may choose to avail themselves of the privilege; but, according to the testimony of the ship's officers, very few remain therein until the close of the voyage, while the majority join the males without hinderance. In fact, every possible inducement is held out to demoralize female emigrants.

In the English steamers there are in use a number of large compartments, containing from twelve to twenty persons; but this is done to a great extent at the expense of ventilation, because a single compartment can be much better ventilated than a number of quasi state-rooms, though only partitioned with lattice-work. The partitions between the single berths are either entirely wanting, or consist of boards 6 inches high and removable at pleasure, so that practically the people sleep in a contiguous body. I believe, moreover, that the capacity of the life-boats is insufficient, in case of disaster, to float all the passengers; for steerage, first and second cabin passengers, and crew frequently reach twelve hundred souls.

RAILWAY TRANSPORTATION IN THE UNITED STATES.

In addition to the inconveniences of a steerage passage, which are a great obstacle to the increase of emigration, complaints have been made against the railway companies because they run the emigrant trains upon slow time or as "extra" trains. Not only is the time from New York to Chicago, or Saint Louis, from three to four days, but the companies hold themselves responsible for no particular time whatever. The immigrant, with wife and children, must take his chances, live upon the hard benches upon springless cars for many days at his own expense, very often without water or fire, owing to the neglect of employés who care nothing for the comforts or necessities of "foreigners" who cannot even be understood.

If the Government makes deductions for failures of the mail-trains, surely it ought to provide a proper legal remedy to the poor emigrant, who is frequently treated with less consideration than the brute creation.

CHARGES FOR EXTRA BAGGAGE.

Another subject of just complaint is the very high prices charged for over-weight on luggage. To the ordinary passengers no charge is made for a reasonable amount of baggage. There are very few trunks which weigh only 80 pounds, and no notice is taken of any trunk weighing less than 150 pounds. Yet the luggage of all emigrants is weighed, and every pound above 80 pounds per ticket must be paid for at prices above express rates. This is particularly hard on German emigrants, who, being a careful and frugal people, bring large quantities of baggage, so that the charges for freight on luggage often exceed the price of the emigrant ticket. If the companies insist on these high fares, the baggage ought to be sent as ordinary freight, because it would arrive nearly as soon as the emigrant train.

The ticket-agents stationed in Castle Garden receive 15 per cent. on tickets and 20 per cent. on the extra-baggage charges, thus holding out a very strong inducement to cheat in weighing. The Government might undertake the sale of tickets through a salaried officer—paid out of the passenger-tax—and thus save at least the 15 per cent. and 20

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per cent., respectively, to emigrants, without a diminution of railway fare.

In case of a railway accident, the telegraph reports "one hundred emigrants killed or wounded," and that is, practically, the end of the matter. No Government agent is at hand to enforce justice to the survivors and to secure to them such care and damages as their case demands.

In view of the treatment which these honest and valuable people frequently receive on board ships, and upon our railways, it is hard to restrain one's indignation within the limits of official propriety, and therefore I recommend most earnestly the adoption of measures of immediate relief.

AN IMMIGRANT BUREAU NECESSARY.

I place foremost as the first of the remedies for the evils incident to steerage immigration the necessity of an immigrant bureau. No one thinks of dispensing with the Indian Bureau, though we have only 300,000 Indians in the United States, while nearly that number of immigrants arrive annually upon our shores, at widely scattered ports, and needing protection from imposition and wrong. No investigation of the question, at long intervals and by agents only theoretically acquainted therewith, can devise an adequate system. Systems grow up, and defects are remedied by the observation and experience of bureau officers who are specially charged with the execution of the law. I believe, therefore, that the first essential step of relief is the organization of a bureau which will, through the Secretary of the Treasury, lay before Congress, from year to year, such projects of law as will secure the object sought.

If the tax which the State of New York is permitted to levy upon the emigrant—and most unjustly upon the four-fifths who only remain twenty-four hours within its jurisdiction—is made universal and collected at all the ports, the expenses of the bureau will be paid; special agents appointed to protect the emigrant while *in transitu*; places of refuge for the temporary sick and needy can be established; interpreters provided, and full and complete justice done to the newly arrived citizen, who will feel that the General Government and the American citizens are his friends instead of his enemies.

A COURT OF SUMMARY JURISDICTION NEEDED.

The present law should be amended in many particulars, as I shall show in a special report, but chiefly among these is the creation of an emigrant police court, having limited but summary jurisdiction. Both Germany and England have them, and they are also here an absolute necessity. To refer the emigrant to the slow machinery of our Federal courts is a mockery. A ship-load of emigrants scatters, of necessity, like the leaves of the forest; and unless we wish to add to the many hardships of emigration imprisonment for many months as witnesses, there must be a United States commissioner having summary jurisdiction to the amount of a hundred dollars' fine, and the power to bind over to court in all cases of more grave violations of law. This jurisdiction should extend to swindling in exchange, or by boarding-house keepers, or a violation of contracts by railways in not running their trains on schedule time or having proper cars.

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AMERICAN STEAMSHIP COMPETITION.

When sailing for Europe, under orders, I had my choice to sail under the English, German, French, or Swedish flags, but not under our own. In the great harbors of Liverpool, Hamburg, Bremen, or Rotterdam, I looked in vain for our own beautiful banner, which in times past floated in every harbor of the known world. America has lost immensely in prestige and influence by its withdrawal from the high seas, and no narrow policy should influence our statesmanship in this direction. It does not come within the province of my instructions to point out the particular means by which the result can be achieved; but I am convinced that a few American lines of steamers, built upon the latest models, could have airy, roomy, and commodious second-cabin accommodations for emigrants, and if our Government were to allow them $10 premium for each emigrant carried, would not only greatly augment emigration, but would compel all competing lines to provide better accommodations.

In this connection it is only bare justice to state that the late report upon emigration, published by the Bureau of Statistics, is recognized as the first official document of value and approximate accuracy upon the subject, and is extensively sought both by men of science and the masses. Books like these will do more to incite a desire for emigration than private pamphlets, circulated by State agents, however numerous, stationed at the place of embarkation.

AN INTERNATIONAL CONVENTION.

The comfort of the emigrant would be greatly promoted if his rights aboard ship were protected by treaty with the foreign powers. Efforts in this direction have already been made, and I am informed will be renewed; but inasmuch as this branch of the subject is within the jurisdiction of another Department, I only allude to it as one of the proper remedies. I am informed that the two great German lines (Hamburg and Bremen) are desirous that a treaty should be framed; but care must be taken that the allowance of clear space to each emigrant shall be accurately described.

OBJECTIONS ANSWERED.

All legislation having for its purpose the good of the poor and lowly, will necessarily be opposed by those who make money off their ignorance and helplessness. The argument will be twofold—all manner of trivial objections to details, as if any system of legislation could be at once perfected without time and administrative experience, and upon the general ground that the United States Government has not the power to protect the newly arrived emigrant, or that upon principle its exercise is inexpedient. Since Congress has assumed the power to protect the dumb cattle *in transitu* on railways, the power to protect passengers may be conceded. Yet all this extension of Federal administrative influence is regarded with jealousy, and characterized as centralization. The establishment of an emigrant bureau is no additional charge upon the Treasury, as its annual income, over $500,000, will be amply sufficient; nor need it employ more agents than are now employed by the New York State commission, but its protection will be uniform, because its jurisdiction is paramount. All legislative power in the United States is delegated to two sets of agents—the legislatures

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of the several States, and to Congress. One set is dependent upon the will of a portion of the people, the other receives its mandate every two years from all the people. Therefore, what is misnamed centralization, and compared with that of France, is merely a transfer of work for the sake of convenience and uniformity from one set of agents to another. as has been done by the establishment of United States banks, and a uniform bankrupt act, &c. As long as the Government is *of* and not *above* the people, representing only its collective will, "centralization" simply means a transfer of administrative power to advance the common good. Careful observation, based upon statistics, will incontestably show that all the great operations incidental to national life can be best administered by Government; and that the losses incurred, either through the dishonesty or incapacity of Government agents, are a much smaller per cent. than those incurred by private parties through mismanagement or embezzlement. If partisan rancor did not frequently obscure public judgment, our Government would receive at this time the recognition and praise to which it is so justly entitled.

At present the European emigrants enter the United States at the back-door, as it were, the Government barely permitting immigration, but taking no cognizance of the movement after the immigrant has landed. State governments, having no diplomatic standing, nor adequate jurisdiction, can give no guarantees, either to the individual immigrant or to foreign governments, that their new-comers shall be fully protected. When the Government of the United States shall have extended its special protection, and removed all possibility of danger to the emigrant, foreign governments may be less adverse to the voluntary expatriation of a portion of their citizens. I am informed by gentlemen thoroughly conversant in emigration affairs, that adequate legislation will greatly stimulate the emigration of the best elements of European society.

REMEDIES UNDER EXISTING LAWS.

In answer to that part of my instructions, whether anything can be done under existing laws, I recommend that, upon the arrival of all vessels carrying emigrants, an inspector or inspectors, speaking as many languages as possible, (certainly German,) shall be sent on board, whose duty it shall be to muster the emigrants and ask them whether they had any grounds of complaint, and in case they had any that seemed to be well founded, to make a memorandum in writing.

Secondly. To make a complete diagram of the room occupied by steerage passengers, measuring its superficial and cubic clear space; and also to ascertain the number that occupied said space. Further, to ascertain the quality and quantity of food; the means of ventilation and of escape.

Thirdly. To make a duplicate report to the collector of the port, who shall forward one copy to the Treasury Department.

I am of the opinion that many abuses would be remedied by the companies themselves if their attention were officially directed to them. Very frequently the stewards and subordinates are responsible for unwholesome and badly cooked food and uncleanliness, while the directors pay for an abundant supply. I fully believe that in the absence of further legislation, this official inspection would have a beneficent effect.

Lastly. Inasmuch as foreign ship-owners have raised the question whether a captain of a foreign ship can be fined and imprisoned by our Government for acts done at sea, and lawful under his own government, the question of jurisdiction should be referred to the Hon. Attorney

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General for examination and advice, so that in case of an adverse decision, other remedies may be devised in the new law.

Permit me to recommend to your justice and humanity, and to that of the people of the United States, the coming millions of citizens, so that they may receive proper protection, be directed in the proper channels of life, and thus be enabled to assimilate with American society. I am sure that our adopted citizens who expect to receive relatives, friends, or countrymen from their former homes will be specially gratified if the strong arm of the Government is interposed for their protection.

Remembering the confidence reposed in me, with gratitude the above is respectfully submitted.

J. FRED. MEYERS,
Secretary's Office, Treasury Department.

Hon. GEO. S. BOUTWELL,
Secretary of the Treasury.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

RETURNING

The bill (S. 955) granting a pension to Mary Ann Montgomery, widow of William W. Montgomery, late captain in Texas Volunteers, with his objections.

MAY 14, 1872.—Read, referred to the Committee on Pensions, and ordered to be printed.

To the Senate of the United States:

I have the honor to return herewith S. 955, entitled "An act granting a pension to Mary Ann Montgomery, widow of William W. Montgomery, late captain in Texas Volunteers," without my approval, inasmuch as the concluding phrase, "and in respect to her minor children under sixteen years of age," has obviously no meaning whatsoever.

If it were the intention of the framer of the bill that the pension thereby granted should revert to said minor children upon the remarriage or death of the widow, the phrase referred to should read as follows: "and, in the event of her remarriage or death, to her minor children under sixteen years of age." I therefore return the bill for proper action.

U. S. GRANT.

EXECUTIVE MANSION, *May* 14, 1872.

FORTY-SECOND CONGRESS OF THE UNITED STATES OF AMERICA.

At the second session, begun and held at the city of Washington, on Monday, the fourth day of December, one thousand eight hundred and seventy-one:

AN ACT granting a pension to Mary Ann Montgomery, widow of William W. Montgomery, late captain in Texas Volunteers.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior be, and he is hereby, authorized and directed to place on the pension-roll, subject to the provisions and limitations of the pension laws,

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the name of Mary Ann Montgomery, widow of William W. Montgomery, late captain in Texas Volunteers, and to pay her a pension, from the passage of this act, as a captain's widow, and in respect to her minor children under sixteen years of age.

J. G. BLAINE,
Speaker of the House of Representatives.
SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

I certify that this act did originate in the Senate.

GEO. C. GORHAM,
Secretary.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

COMMUNICATING,

In compliance with a resolution of the Senate of March 28, 1872, correspondence in regard to the persecution and oppression of the Israelites in Roumania.

May 14, 1872.—Read, referred to the Committee on Foreign Relations, and ordered to be printed.

To the Senate:

In answer to a resolution of the Senate of the 28th of March last, I transmit herewith copies of the correspondence between the Department of State and the consul of the United States at Bucharest, relative to the persecution and oppression of the Israelites in the principality of Roumania.

U. S. GRANT.

WASHINGTON, *May* 14, 1872.

DEPARTMENT OF STATE, *Washington, May* 14, 1872.

The Secretary of State, to whom was referred the resolution of the Senate of the 28th of March last, requesting the President to "communicate to the Senate, if in his opinion not inconsistent with the public interest, any information he may have in regard to the persecution and oppression of the Israelites in the principality of Roumania," has the honor to lay before the President copies of the correspondence between this Department and the consul of the United States at Bucharest, relative to that subject.

HAMILTON FISH.

To the PRESIDENT OF THE UNITED STATES.

List of papers.

Mr. Peixotto to Mr. Hunter, October 6, 1871.
Mr. Peixotto to Mr. Hunter, February 6, 1872.
Mr. Peixotto to Mr. Hunter, February 7, 1872.
Mr. Peixotto to Mr. Hunter, February 8, 1872.
Mr. Peixotto to Mr. Hunter, February 9, 1872.
Mr. Peixotto to Mr. Hunter, February 10, 1872.

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Mr. Peixotto to Mr. Hunter, February 12, 1872.
Mr. Peixotto to Mr. Hunter, February 15, 1872.
Mr. Peixotto to Mr. Hunter, February 27, 1872.
Mr. Hunter to Mr. Peixotto, April 1, 1872.
Mr. Fish to Mr. Peixotto, April 10, 1872.
Mr. Peixotto to Mr. Hunter, April 5, 1872.
Mr. Peixotto to Mr. Hunter, April 19, 1872.
Mr. Fish to Mr. Peixotto, May 15, 1872.

Mr. Peixotto to Mr. Hunter.

No. 11.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, October 6, 1871. (Received Nov. 2.)

SIR: * * * * * *

Concerning the persecution of the Jews, I am pleased to say that the action of our Government has realized, thus far, the moral influence it was hoped my appointment and acceptance of the position would exercise.

My official reception by the prince, as I have already communicated, was most gracious. The sentiments of humanity he was pleased to express have been practically carried out in a more jealous regard for, and protection of, the rights of the oppressed Israelites. While it has been impossible to restrain prejudices fostered by designing men, mostly for political ends and in many instances for the purposes of robbery, every attempt at open violence has been promptly quelled and effective measures taken to prevent outrage.

The actual cabinet of His Highness are in perfect accord with his humane and enlightened sympathies, while no previous legislature has exhibited such marked appreciation of a question which affects in so vital degree the moral and material interests of the land. The best hopes are cherished by the friends of order and stability for the realization of the emancipation of the Jews, and of a more just and enlightened policy toward strangers.

I am, sir, &c.,

BENJ. F. PEIXOTTO,
United States Consul.

HON. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

Mr. Peixotto to Mr. Hunter.

No. 18.] CONSULATE OF THE UNITED STATES,
Bucharest, February 6, 1872. (Received March 5.)

SIR: I have to inform you that accounts have reached here of deplorable scenes which have recently transpired in several towns of Bessarabian Roumania, and especially at Ismail, Vilcovu, and Cabool.

The population had rushed upon the Israelites, devastated their homes, and blood had been shed.

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Hundreds of families had been beaten, despoiled, and driven forth. Hundreds had fled across the Danube for refuge in Turkey.

* * * * * * *

I am, sir, &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

Mr. Peixotto to Mr. Hunter.

No. 19.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 7, 1872. (Received March 5.)

SIR: The origin of the serious riots against the Israelites of Ismail, Vilcovu, and Cabool is attributed to a report circulated in the former town, of a theft and profanation committed by an alleged Israelite in the cathedral of Ismail.

The thief is reported to be a baptized Jew, a deserter from the Russian army, and but three months resident in the town.

He has implicated the rabbin, the president, and other elders of the Jewish community, as accomplices, who, though resident for long years in the town, and bearing hitherto an unimpeachable character, have been arrested and thrust into prison.

The consul of Austria reports sixty houses demolished in the Jewish quarter. The Greek consul is reported to have restrained his subjects from participation in the outrages.

The Austrian and English consul and agent report that the Russians and Bulgarians, who form the principal part of the inhabitants, were the chief promoters.

I am, sir, &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

Mr. Peixotto to Mr. Hunter.

No. 20.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 8, 1872. (Received March 5.)

SIR: Ismail contains a population of 20,000, of whom 2,000 are of the Hebrew faith. The assault upon the Israelites was commenced on the evening of the 24th of December, and lasted three days; another account says seven.

During this time the houses of the Israelites were broken into, the inmates beaten and driven forth, valuables robbed, the furniture destroyed, and the premises gutted. One hundred families took refuge in Tultscha, on the opposite Turkish shore. Some few found an asylum on board the Austrian national ship Pest; others fled to the fields. The Austrian subjects were protected at their consulate, except the rabbin, who was arbitrarily carried off and imprisoned. The consul general of Austria, resident here, has made a demand for his liberation.

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Dispatches received here this evening confirm accounts of similar outrages at Vilcovu and Cabool. Thirty families of the former place are reported as plundered, driven from their homes and exposed to the rigors of the season.

At Cabool the Israelites defended themselves, taking refuge finally in the barracks; two are reported killed, ten to twelve wounded. The excesses appear to be spreading, and are said to be investigated by enemies of the government.

I am, sir, &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

Mr. Peixotto to Mr. Hunter.

No. 21.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 9, 1872. (Received March 5.)

SIR: Since writing dispatch No. 20, of yesterday morning, I have received several letters and telegrams from the Jewish communities of Ismail and Vilcovu, imploring the good offices of this consulate with the central government in behalf of the defenceless and wretched Jewish inhabitants, who appear to be still suffering from outrages and exposed to violence. A deputation of the Jewish community of Bucharest has also waited upon me with a like prayer in behalf of their unfortunate co-religionists.

I immediately called on the authorities and made known the contents of these communications.

Similar appeals were made to other consuls. At 2 o'clock to-day a meeting of the representatives of all the foreign powers was held at the British consulate general, when it was resolved to address a *note identique* to the Roumanian government.

I have the honor to inclose a copy of said note. It was concurred in by all the consul generals present. In the absence of the consul general of Prussia, the vice-consul telegraphed to Prince Bismarck for instructions.

Later I had an interview with the prince and the ministers of interior and justice, from all of whom I received assurances that effective measures were being taken, and that the ends of justice would be subservient.

I am, sir, &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

[Translation.]

Mr. MINISTER: I have learned with regret the deplorable scenes which are said to have taken place some days since in the towns of Ismail and Cabool.

The population had rushed upon the Israelites, devasted their homes, and blood had been shed.

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I beg to call without delay the attention of the actual government on the serious dangers which would arise if these troubles should be renewed or extended, and on the necessity of punishing the authors and repressing all interior disorders, and particularly the arbitrary violences to which the Israelite race has so often been subjected, and which have several times justified the remonstrances of the European governments.

I am convinced that the Princier government will prevent, by its energy, the recurrence of all vexations against the Israelites, and vindicate thus the principles of humanity and civilization.

Receive, Mr. Minister, the assurance of my high consideration.

BENJ. F. PEIXOTTO.

Mr. Peixotto to Mr. Hunter.

No. 22.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 10, 1872. (Received March 9.)

SIR: A deputation sent by the Jewish inhabitants of Ismail waited upon me this morning, and, presenting a very detailed and circumstantial account of the recent violences perpetrated in that town, besought my intercession in behalf of their still suffering and imperiled condition.

The deputation, composed of intelligent men long resident in Ismail, stated that for more than "five years the Israelites of the country had been repeatedly subjected to similar acts of barbarism, and to this day no redress had been obtained.

"In depths of despair they presented themselves to the representatives of a government distinguished the world over by its justice, enlightenment, and humanity, believing that their unhappy condition might be alleviated should an effort be made in their behalf.

"That it rested with the central government to adopt such measures as would not only suppress the present violence, but, by punishment of the guilty and indemnity to the innocent, (never hitherto practiced,) serve as an example and be security for the future."

I replied that, anxious as my Government was to see the inhabitants of every land protected in their lives and property, and a stop put to persecutions that disgraced humanity, I could not officially interfere in the internal affairs of the country, unless the rights of an American citizen resident herein had been invaded; that I had been told this was the case a few days ago respecting one of the persons illegally arrested in Ismail, but upon investigation had learned otherwise.

Nevertheless, there were certain principles which all governments were bound to respect, and when these were outraged nations were concerned to see the barbaric land brought within the pale of civilization. But interference to this end was of the most delicate of all proceedings, and was to be guarded with jealous circumspection.

Happily the good relations which I had the honor to hold with the government of the prince might permit me to speak in their behalf without being misconstrued, and this I would do. At a later hour I saw the minister, and, at my request, an interview was granted to the deputation, to whom he listened with great attention, and, at the close, requested their communication should be reduced to writing and signed, and he would on the basis thereof grant their prayer in so far at least as the appointing of a special commission. He added that strict investigation should be made, impartial justice rendered, and the guilty punished.

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To the extent of his authority he remarked he was resolved to put an end to the persecutions of the Israelites, and those who were culpable of inciting or practicing such should be made to suffer.

As presenting their version of the affair I have the honor to inclose a copy of the petition, (translated,) presented by the deputation to the minister.

I am informed that tranquillity has been restored, and a sufficient military force present to maintain the peace.

I am, &c., &c.,

BENJ. F. PEIXOTTO.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

One inclosure: Petition of Ismail deputation to minister of home affairs.

Copy petition addressed to the minister of home affairs.

BUCHAREST, *February* 10, 1872.

Mr. MINISTER: The undersigned, a deputation sent from the Jewish community of Ismail, come to submit to your excellency the following facts respecting the deplorable events which have transpired at Ismail:

On the 24th of December (5th January, N. S.) a rumor was spread in the city of a theft of some 100 ducats and two small spoons having been committed in the cathedral of the town, and of the church having been profaned by the wretch who had perpetrated the robbery. Suspicion falling immediately on an individual called Jacob Silber, a renegade Israelite of Lilhouania, who, deserting the Russian army, had come to Ismail some three months previous and was working at a tailor's. This renegade, on being arrested, first deposed that he had committed the crime in an understanding with his master, the tailor, and that the stolen objects were hidden in a store of the house of the latter. The premises being thoroughly searched, nothing was found, but the tailor was nevertheless arrested. At length the thief, for reasons he probably could best explain, made a second declaration, in which he charged that he had committed the theft at the instigation of Mr. D. Goldschlaeger, who, on the day of the robbery, he said, had told him, "Go to the church, steal the holy objects, bring them to me, and I shall make you the richest man in the city, and you shall be a saint with the Jews." After this declaration the said Goldschlaeger, one of the prominent merchants of that place, known since fifteen years as an honorable and honest man, was seized, kept four days in the police and then thrown into prison, where he lies since; and being a feeble and sickly man, is in imminent danger of life. Mr. Goldschlaeger, the day when the thief alleged he had met him taking a walk and told him to go to commit the crime, had just come home from the residence of the undersigned Goldenberg, where, in deep bitterness, he had, according to the prescription of our religion, mourned over the loss of a beloved child just deceased of angina diphtherica. This fact is attested by four witnesses. Moreover our rabbi was and is still imprisoned because, as it is alleged, the stolen objects were found in the latrines of the Chan Pascatoirtz, where live about forty families and where happened also to live the rabbi. This is the only ground upon which his arrest has been made.

We therefore implore you, Mr. Minister, to set free these two innocent men, for whom the whole city is ready to give the utmost guarantee.

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A certain Dropulo, interpreter at the police, who came to ask money from the Jews, threatening that otherwise he would denounce them as accomplices, in consequence of which some Israelites gave him, out of fear, one, two, and three Napoleons each, is the man whom we suspect that, for motives of extortion, has instigated the thief to denounce Mr. Goldschlaeger as accomplice, knowing that money could be gained for setting him free. It is evident, Mr. Minister, that the whole story has been invented to be used against the Israelites and provoke the barbarous scenes which continued for seven days. Many houses have been not only plundered of their contents, but even demolished; many families have fled to Tultscha, while others have been driven forth into the streets. Those of the rioters who were arrested were set free the same day. In spite of the energy displayed by the prefect of police and Lieutenant Sbarlea, the small force of soldiers could only guard one street, while in others the mob had free scope to act with all the fury of fanaticism against the Israelites, who, far from being guilty of any offense, were totally ignorant of the cause of their maltreatment, having no knowledge even of the alleged theft and profanation.

The arrest of the most honorable members of our community only served to inflame and encourage the mob to fresh excesses.

Mr. Minister, we pray you to set at liberty the two innocent and unfortunate men, for whom every guarantee required will be given, and send a commission to investigate the whole matter in a serious and impartial manner. Only such an examination will discover the guilty and indemnify the innocent.

Hundreds of families are naked and shelterless, mothers and children are living in the open fields, exposed to the severities of the season, while numerous persons are threatened with starvation.

Help quick, and God will help you.

Receive, Mr. Minister, together with our tears, the assurance of our most profound respect.

THE ISRAELITE DEPUTATION FROM ISMAIL.

Mr. Peixotto to Mr. Hunter.

No. 23.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 12, 1872. (Received March 12.)

SIR: The consul of Germany has called to inform me that he last evening received a telegram from Prince Bismarck, instructing him to sign the note addressed to the Roumanian government concerning the persecution of the Israelites, a copy of which I had the honor to inclose and refer to in my dispatch No. 21, of the 9th instant.

* * * * * * *

I am, &c., &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

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Mr. Peixotto to Mr. Hunter.

No. 25.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 15, 1872. (Received March 15.)

SIR:

* * * * * * *

The Government has sent a special commission to investigate the affairs at Ismail.

I am, &c., &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY,
Washington, D. C.

Mr. Peixotto to Mr. Hunter.

No. 26.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, February 27, 1872. (Received March 26.)

SIR: Yesterday I was waited upon by a deputation from the Israelites of Cabool, who besought my good offices near the Roumanian government, in order that they might present the petition, copy of which, translated from the Romanian, I have the honor herewith to inclose. I procured the interview desired, and the minister having carefully read the same, and interrogated the deputation, promised to grant the prayer of the wretched supplicants.

* * * * * * *

I am, &c., &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

Inclosure: Petition of the Israelite delegates from Cabool to the Roumanian government:

Traduction from the Roumanian of the petition presented to the government of Roumania on Monday, February 26, 1872, *by a deputation sent by the Israelites of Cabool.*

Mr. MINISTER: The undersigned, delegates from the part of the unfortunate Israelites of Cabool, come to unfold before you the sinister tableau of the direful facts which have occurred in that town.

After the pillage committed at Ismail, several persons came from there and commenced to say, publicly, that they were going to imitate the inhabitants of Ismail, and kill all the Israelites of the place. I, the undersigned, Archer Gold, went immediately to the prefect Craciunerco, telling him what I had heard, and mentioning Mr. F. Vaculpulo, who had distinguished himself most by threatenings. The prefect calmed my apprehensions, promised to take immediate measures, and sent out into the streets some fifteen soldiers. The next day, Wednesday, the

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19th of January, the threatenings and the noise increased. I repaired again to the prefect, but received the answer that he had left town.

I then went to see the chief of police, whom I implored to take measures. On Thursday a Russian stopped a Jewish woman in the street, saying that he had orders from the government to beat her. The chief of police wanted to arrest the man, but a Greek, called Spiru, rushed upon him, crying, "Who has given you the right to arrest a citizen?" and threatening him with blows. The chief of police was forced to release the Russian. On Friday and Saturday the Israelites, to avoid conflicts, abstained from going to their synagogues.

Sunday the commissioner of police came to me to ask money. I sent my son to collect some among the Israelites, when he returned, out of breath, and told us that they had commenced to beat the Jews in the streets.

Bands of fifty and one hundred suddenly gathered before my house, some of them being furnished with revolvers. Seeing that I and my sons were armed, and resolved to defend ourselves to the utmost, they retired. The evening the commissioner came to ask me to leave the house, as the mob intended to put fire to it.

In a neighboring house there were also assembled some armed Jews. One of them fired on the mob, who threatened with destruction all who were within. Two persons were wounded, one dangerously, the other in the foot. The Israelite who had thus defended himself was arrested, and is still lying in prison.

During this time the soldiers of the garrison summoned the Israelites from their houses and were taking them to the barracks. But while they were escorting them thither there happened the most barbarous cruelties, the account of which alone is enough to make the heart shudder. Through the ranks of the soldiers who surrounded the Israelites rushed the fanatics, armed with sticks, splitting open the heads of some, breaking the arms of others, wounding a great number, and perpetrating other unheard-of crimes, without the soldiers making any movement toward defense. The way to the barracks was marked with the smoking blood of the unhappy victims.

In the barracks gathered more than one thousand Israelites, who remained there for three days without food. The dreadful anguish of mind caused two pregnant women to be prematurely confined in midst of the crowded multitude. The husband did not know of his wife, the parent his child. An apathy, touching dementia, prevailed, heart-rending to behold. One evening the commander came to tell the wretches that the mob were going to fire through the windows, and advised them to bend down to the floor in order not to be struck by the balls; and yet the soldiers did nothing to defend them; not one gun was discharged against those who manifested their deadly purpose.

While the Israelites were lying in the barracks, their homes, exposed without protection, were completly devastated. The doors were forced open, the windows broken, the ceilings destroyed, the floors pulled up; they broke the furnitures, demolished the walls, plundered and carried away all valuables. Our goods and our money are in the possession of the robbers. At a certain Mr. Holban's, (lawyer,) many objects have since been found hidden. Our synagogues were devastated and converted into cess-pools, and the holy books torn and thrown into the filth. Now the misery is at its height. Those who some days previous were well off are now reduced to extreme poverty. Their houses are in ruins; they are lacking their daily bread, shelter, and clothing to protect them against the cold. Hundreds are lying upon straw with their

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bleeding wounds. The two daughters of a poor widow were violated in a most brutal manner.

The authorities did nothing to prevent the excesses. The procuror of Fokshaus refuses even to look at the damages. The proprietor, Karavassile, who had offered us 1,500 ducats to sign a declaration stating that the Greeks had taken no part in the riot, gave a ball to the procuror, which seems to have completely changed his feelings.

The Russians were constantly saying that they had received orders from the government to kill all the Jews; others said they had these orders from the Russian consul. The garde-frontiers, who had gone with their sergeant-major Floreseu to Leova, maltreated the Jews in every village they passed through, stating that the government had sent them orders to this end.

The local administration we believe to be accomplices in the riot, for the slightest attempt to repress the mob would have been successful, as was evidenced at Chilia, where nothing but the whip of the chief of police had the effect of putting to the rout those who had gathered for a similar purpose.

We estimate the losses sustained by our community at 40,000 ducats. Our sufferings have been intense; we feel how inadequate we are to express the misery we have endured; we come to you, Mr. Minister, for justice. We ask that a *special commission* composed of citizens of Bucharest, in whom the government reposes confidence, be selected to visit our town and make an investigation both with reference to the facts we have here but feebly portrayed, as well as to ascertain the amount and character of our losses, that the guilty may be punished and we innocent sufferers of wanton brutality indemnified. In the name of our brethren exposed to similar acts, we also invoke that a law be presented to the now sitting chambers, holding each community responsible for similar acts of vandalism.

We implore prompt action of the government; only such can rescue us from and prevent recurrence of misfortunes. In the name of God, in the name of our frenzied wives, our weeping children, our starving, shelterless multitude, we ask, we demand this justice.

We come, charged by our community, who yet repose confidence in the humanity and virtue of our prince and in you, Mr. Minister, in whose hands rests the administration of the internal affairs of the country.

With profound respect,

ARCHER GOLD,
MICHEL GOLD,
Delegates sent from the Israelite Community of Cabool.

Mr. Hunter to Mr. Peixotto.

No. 26.] DEPARTMENT OF STATE,
Washington, April 1, 1872.

SIR: Your dispatch No. 26, of the 27th of February last, has been received. Your proceedings in presenting the petition of the Israelites of Cabool to the Roumanian government are approved.

I am, sir, &c.,

W. HUNTER,
Second Assistant Secretary.

B. F. PEIXOTTO, Esq.,
United States Consul, Bucharest.

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Mr. Fish to Mr. Peixotto.

No. 28.] DEPARTMENT OF STATE,
Washington, April 10, 1872.

SIR: Among the large number of Israelites in this country, there are probably few whose sympathies have not been intensely excited by the recent intelligence of the grievous persecutions of their co-religionists in Roumania. This feeling has naturally been augmented by the contrast presented by the position of members of that persuasion here, who are equals with all others before the law, which sternly forbids any oppression on account of religion. Indeed, it may be said that the people of this country universally abhor persecution anywhere for that cause, and deprecate the trials of which, according to your dispatches, the Israelites of Roumania have been victims.

This Government heartily sympathizes with the popular instinct upon the subject, and while it has no disposition or intention to give offense by impertinently interfering in the internal affairs of Roumania, it is deemed to be due to humanity to remonstrate against any license or impunity which may have attended the outrages in that country. You are consequently authorized to address a note to the minister of foreign affairs of the principalities, in which you will embody the views herein expressed, and you will also do anything which you discreetly can, with a reasonable prospect of success, toward preventing a recurrence or continuance of the persecution adverted to.

I am, sir, &c.,

HAMILTON FISH.

B. F. PEIXOTTO, Esq.,
United States Consul, Bucharest.

Mr. Peixotto to Mr. Hunter.

No. 28.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, April 5, 1872. (Received April 25.)

SIR: I have the honor to inclose the reply, with translation, of the minister of foreign affairs to my note of February 9, which I had the honor to transmit to you in my dispatch No. 21.

A precisely similar response has been received by each of the other consuls.

The procuror general, referred to in the minister's note, has returned and made a report to the government. He has permitted me to see this report. After making a careful investigation he completely exonerates every Israelite from any participation whatsoever in the alleged theft and desecration of the church. The evidence he obtained shows it was committed by a renegade from the Russian army, an apostate, who had resided but three months in Ismail, and who, by his own confession, made in open court, has been three times convicted in Russia of crime.

* * * * * * *

Notwithstanding this report the five Israelites arrested, including the rabbin and president of the community, are still confined and committed to stand trial as common felons on the 15th instant.

Forty-six of the principal rioters of Cabool have, in the meanwhile, been liberated. The knowledge of this fact, transmitted to the cabinet at London, has caused Lord Granville to send a second dispatch to the English consul, instructing him to remonstrate with the government.

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It seems to be every day more apparent that nothing but the direct intervention of the foreign powers, who have the right under the treaty of Paris, will put an end to the internal disorders resulting from the serious persecutions of the Hebrews.

I am, sir, &c.,

BENJ. F. PEIXOTTO,
United States Consul.

Hon. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

[Translation.]

MINISTRY OF FOREIGN AFFAIRS, No. 1142,
Bucharest, 7–19th February, 1872.

Mr. CONSUL GENERAL: Before the receipt of the note which you were pleased to address me on the 9th of February, No. 126, the government of the Prince was aware of the deplorable events which had transpired at Ismail and Cabool, and it had made it a point to repress them with all the energy which was demanded by the principles of order, humanity, and civilization.

I am the first to condemn, Mr. Consul General, the acts of violence of which the population of said towns have been guilty toward the Israelites. It seems to me, however, just, if we are to form an impartial judgment in relation to the events in question, to search for the cause which gave rise to the excitement of the population. It is now clearly shown by the examination which has been made that these disorders only took place in consequence of an impious and audacious theft committed by Jews in the cathedral of the town of Ismail.

The gravity of these two facts renders it our duty to search, with all necessary impartiality, for the parties who were guilty of the theft, and for the ring-leaders in the disorders, so as to proceed against them with equal vigor. To this effect we have already sent the attorney general of the court of appeals of the capital to the spot.

Not being for the moment in a position to know all the details of the affair in question, I shall, before communicating them to you, Mr. Consul General, await the subsequent results of the examination, which is now being actively prosecuted. But, what I do not hesitate now to add, that measures have been taken to insure the respect due to the law, and that the government is firmly resolved to combat all elements of disorder wherever they may be found.

Receive, Mr. Consul General, the assurance of my high consideration.

G. COSTA-FOUR.

Mr. Peixotto to Mr. Hunter.

No. 30.] CONSULATE OF THE UNITED STATES OF AMERICA,
Bucharest, April 19, 1872. (Received, May 13.)

SIR: On Monday, the 15th instant, at Buzéo, the five Israelites, including the rabbi and the president of the community, accused as accomplices of the thief Silberman, were tried and condemned to three years' imprisonment.

This verdict was given in face of the most positive evidence of their innocence, the thief himself confessing to his guilt and exculpating them, and the attorney general declaring that he, although public

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prosecutor, must abandon the accusation, there being absolutely no case, adding that he was astounded that the court, of putting in accusation of Foksani, should have held these unhappy men for three months 'on such baseless testimony.

On Wednesday, the 18th instant, the individuals accused of the gravest excesses against the Israelites of Vilcova, and whose guilt was proved beyond the shadow of doubt, were acquitted *en bloc.*

Those of Cabool will be tried to-day, when the same result will no doubt be reached. These two verdicts, following each other, so gravely periling the security of the Israelite population during the impending (Greek) Easter, has led the diplomatic and consular corps, in obedience to the general and special instructions received from their respective governments, to unite in a collective note to the Princier government, copies of which (in the original French and English translation) I have the honor herewith to transmit.

All the members of the corps at present in the city, *except* the Russian, have signed the same.

I trust it will have the approbation of the President.

I am, sir, &c., &c.,

BENJ. F. PEIXOTTO.

HON. SECOND ASSISTANT SECRETARY OF STATE,
Washington, D. C.

BUCHAREST, *April* 18, 1872.

The undersigned deem it their duty to address to the government of the Prince, collectively, and in the most formal manner, the verbal observations which most of them have been ordered by their governments to present to it in relation to the Israelitish question. They cannot, in the first place, help expressing their astonishment that the result of the investigation, ordered in Roumanian Bessarabia more than two months since, has not yet been communicated to them, notwithstanding the assurance contained in the note of the minister of foreign affairs, bearing date of the 7—19th of February last.

They have, moreover, learned with profound regret that, after having condemned several Israelites to severe penalties, the prosecution of whom was abandoned by the public ministry itself, the court of assizes at Buzéo has acquitted all the individuals who were charged with having committed the gravest excesses and crimes against the Jewish population of the town of Vilcova. The undersigned see, in this double verdict, an indication of the dangers to which Israelites are exposed in Roumania, the imminence of which, at the approach of the Easter holidays, justified the steps recently taken by them simultaneously near the government of the Prince.

The governments of the undersigned will judge whether the impunity which has been enjoyed by the assailants of the Jews is not of a nature to encourage a repetition of scenes of violence quite unworthy of a civilized country, which, as such, ought to insure freedom and security to all religious denominations.

THIDAN, (*Germany.*)
SCHLECHTA, (*Austria, Hungary.*)
PEIXOTTO, (*United States.*)
G. LE SOUARD, (*France.*)
J. GREEN, (*Great Britain.*)
NEANOS, (*Greece.*)
ILLORIA, (*Italy.*)

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Mr. Fish to Mr. Peixotto.

No. 30.] DEPARTMENT OF STATE,
Washington, May 13, 1872.

SIR: The Department has received your dispatch, No. 30, of the 19th ultimo, accompained by a copy of a remonstrance addressed by the representatives of foreign governments at Bucharest, to that of the principalities, against recent maltreatment of Israelites there.

The Department approves your taking part in that remonstrance. Whatever caution and reserve may u ually characterize the policy of this Government in such matters, may be regarded as inexpedient when every guarantee and consideration of justice appear to have been set at defiance in the course pursued with reference to the unfortunate people referred to. You will not be backward in joining any similar protest or other measure which the foreign representatives there may deem advisable, with a view to avert or mitigate further harshness toward the Israelites residents in, or subjects of, the principalities.

I am, sir, &c.,

HAMILTON FISH.

B. F. PEIXOTTO, Esq.,
United States Consul, Bucharest.

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42D CONGRESS, 2d Session. | SENATE. | EX. DOC. No. 76.

REPORT

OF THE

SOLICITOR GENERAL AND ACTING ATTORNEY GENERAL,

COMMUNICATING,

In compliance with a resolution of the Senate of April 23, 1872, information in relation to proceedings which have been taken in the judicial courts to restrain the digging of a canal across Minnesota Point, near Du Luth, in the State of Minnesota.

MAY 14, 1872.—Ordered to lie on the table and be printed.

DEPARTMENT OF JUSTICE,
Washington, May 14, 1872.

SIR: I have the honor to acknowledge the receipt of the following resolution of the Senate, under date of the 23d ultimo:

"*Resolved*, That the Department of Justice be directed to communicate to the Senate information of proceedings which have been taken in the judicial courts to restrain the digging of a canal across Minnesota Point, near Du Luth, in the State of Minnesota, and a copy of the record of such proceedings, and all correspondence in the Department of Justice concerning the same."

In compliance therewith, I now submit the following papers upon the subject:

1. Copies of letters from the Attorney General to the United States attorney for Minnesota.
2. Copies of letters from the United States attorney for Minnesota to the Attorney General.
3. Copy of a letter from the United States attorney for Minnesota to P. A. Spooner, of Madison, Wisconsin.
4. Copies of letters from the Attorney General to Senator Carpenter.
5. Copies of letters from Senator Carpenter to the Attorney General.
6. Copies of letters from the Attorney General to the Secretary of War.
7. Copies of letters from the Secretary of War to the Attorney General.
8. Transcript of the bill of complaint, affidavits, and proceedings in the case.

Very respectfully, your obedient servant,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

Hon. SCHUYLER COLFAX,
Vice-President of the United States.

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No. 1.

DEPARTMENT OF JUSTICE,
Washington, D. C., April 20, 1871.

SIR: I am advised by the Secretary of War that proceedings injurious to interests which the Government is bound to protect are going on in the neighborhood of Du Luth, within your district. The Government has expended considerable sums of money in improving the entrance to the Bay of Superior from Lake Superior, between Wisconsin Point and Minnesota Point. It is represented that parties are engaged in cutting a canal across Minnesota Point, near Du Luth, which will have the effect of turning the current from Saint Louis River and Saint Louis Bay into Lake Superior, through this new channel, and thus permit the accumulation of sand at the present navigable entrance of the Bay of Superior, and render useless the improvements which have been made there at the expense of the Government.

The projectors of the canal proposed an outer breakwater and an elevated basin between Rice's Point and Minnesota Point, in addition to the canal, and the completion of the basin before the construction of the canal. But they are making the canal without having completed the basin, and therefore the detriment to the navigable entrance is apprehended.

You will institute such proceedings, by injunction or otherwise, in the name of the United States, in the proper United States court for your district, as will stop the cutting of the canal.

The Hon. M. H. Carpenter, of Milwaukee, Wisconsin, will aid you in the matter. You will place yourself in communication with him upon the subject, and take speedy action.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., April 29, 1871.

SIR: I am advised by the War Department that Major D. C. Houston, of the Engineer Corps, at present stationed at Chicago, Illinois, is conversant with all the facts relative to the Government improvements at the entrance of the bay near Superior City, and will, on application, furnish you with any desired information upon the subject.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

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DEPARTMENT OF JUSTICE,
Washington, D. C., July 6, 1871.

SIR: Upon the suggestion of the Secretary of War, I send to you a copy of a report to him from General Humphreys, Chief of Engineers.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., June 8, 1871.

SIR: I inclose herewith a copy of a letter addressed to this Department on the 7th instant by the Secretary of War, relative to certain proceedings instituted against the city of Du Luth, to restrain its agents, by injunction or otherwise, from continuing the work on the canal across Minnesota Point. The Secretary of War requests that you be instructed to consent to the withdrawal of said injunction, and the staying of further proceedings in the matter. Under the circumstances stated in his letter, you will be pleased to comply with his request.

Very respectfully, &c.,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., July 12, 1871.

SIR: In pursuance of a request from the War Department, I transmit to you a report from the Engineer's Bureau, and the copy of another report from Major Houston, engineer, at Chicago, relative to the obstruction in Superior Harbor.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., July 14, 1871.

SIR: Report by telegraph whether a bond has been taken in the Du luth cases; has the injunction been dissolved? Take no further steps nder former instructions on that subject until further directions.

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

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DEPARTMENT OF JUSTICE,
Washington, D C., July 17, 1871.

SIR: Send me, by mail, a copy of the bond, with your opinion on the power of the city to make such a bond, referring to the authorizing clause in the charter.

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., July 18, 1871.

SIR: I am directed by the Attorney General to acknowledge the receipt of your account, $300, for services in the case of The United States *vs.* Du Luth *et al.*, and to inform you that it will be considered when the case shall have been disposed of.

Very respectfully,

A. J. FALLS,
Chief Clerk.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., July 27, 1871.

SIR: Your letter of the 18th instant, inclosing a copy of the bond of the city of Du Luth in relation to the dike across the bay of Superior has been received.

Should any further directions on the subject be found necessary after communication with the War Department, you will receive them accordingly.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, D. C., August 29, 1871.

SIR: I herewith send you copies of a letter from the War Department and of a report from General Humphreys, Chief of Engineers.

In pursuance of the suggestion of the War Department, you will confer with Mr. Carpenter upon the preparation of the bond.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

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DEPARTMENT OF JUSTICE,
Washington, December 8, 1871.

SIR: At the request of the Secretary of War, I transmit herewith, for your information, a copy of a communication from the city attorney of Du Luth to Brigadier General A. A. Humphreys, Chief of Engineers of the United States Army, asking on behalf of the city that the time in which to complete the dike be extended until the 1st day of April, 1872.

It appears that General Humphreys recommends that the time in which the work is to be finished be extended until the 15th day of March, 1872, and his recommendation is approved by the Secretary of War.

Very respectfully,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, December 20, 1871.

SIR: Enoch Totten, esq., of this city, has transmitted your account for fees for services in connection with the proceedings on the subject of the canal at Lu Luth.

I am not advised that your services in the business are terminated.

In my letter of the 29th of August last I directed you, in pursuance of a suggestion from the War Department, to confer with Mr. Carpenter upon the preparation of the bond. Mr. Carpenter informs me that you have not done so.

Will you explain how this is, and how the matter stands?

Upon the completion of the required service your compensation will be promptly paid.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

DEPARTMENT OF JUSTICE,
Washington, December 23, 1871.

SIR: I inclose the copy of a letter from Hon. M. H. Carpenter, in reference to the canal at Du Luth.

Will you explain why the directions from this Department have not been complied with?

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

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DEPARTMENT OF JUSTICE,
Washington, January 2, 1872.

SIR: I have received your letter of the 26th ultimo.

It seems to me that you have made two mistakes in the Du Luth business.

First. In not consulting Mr. Carpenter as to the propriety of the bond to be taken under the instructions from this Department of June 8, 1871, transmitting the communication from the War Department, and as to the proceedings to be taken under those instructions.

You will perceive that the War Department desired that the injunction should be withdrawn, and proceedings stayed, upon the execution of a proper bond by the city of Du Luth.

Second. In not consulting Mr. Carpenter immediately after receiving my letter of August 29.

In such a consultation the sufficiency of the bond would have been considered, and also the expediency of an effort to revoke the action of the court in the event that the bond should be found insufficient.

Without further information from Mr. Carpenter, I cannot determine whether any further action in court should be attempted in the matter.

If it should be ascertained that the proceedings are absolutely terminated, your claim for compensation will receive prompt consideration.

Very respectfully,

A. T. AKERMAN,
Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

P. S.—Since the above was written I have received yours of December 28. As you request, a copy of both shall be submitted to Mr. Carpenter, and we will see if extrication from the difficulty is possible.

DEPARTMENT OF JUSTICE,
Washington, April 24, 1872.

SIR: I inclose herewith a copy of a resolution, adopted by the Senate of the United States upon the 23d instant, calling upon the Department for certain information in regard to the canal across Minnesota Point, near Du Luth, in the State of Minnesota.

I will thank you to obtain and transmit to me at your earliest opportunity all the information called for by said resolution that can be obtained from the records of the United States courts in your State.

Very respectfully,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota.

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[Telegram.]

DEPARTMENT OF JUSTICE,
Washington, May 9, 1872.

C. K. DAVIS, Esq.,
United States Attorney, Saint Paul, Minnesota:

Very important that certified copy of record on Du Luth case be received at once. Congress is calling for immediate report.

Cannot the clerk be instructed to prepare it and send by next mail?

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

No. 2.

SAINT PAUL, *July* 18, 1871.

I am in receipt of your telegram of yesterday, in reference to The United States *vs.* Du Luth *et al.*

I inclose, as directed, a copy of the bond in that case.

The city of Du Luth was incorporated March 5, 1870. (Special laws of Minnesota, p. 5 *et seq.*) Section 1 of the act creates it a municipal corporation "capable of contracting and being contracted with, and shall have the general powers possessed by municipal corporations at common law, and shall in addition possess the powers heretofore specifically granted."

By chap. 4, p. 21, of the charter, the city is authorized to construct or authorize any individual "to construct canals, connecting Lake Superior with Superior Bay, docks, piers, or wharves in the lake, harbor, or bay of Superior, within said city, and shall have a general supervision over the same, so as to secure uniformity of construction and freedom of navigation."

These are all of the provisions of the charter which I can find bearing upon the question upon which you request my opinion.

I think that, under the clause of the charter authorizing the city to construct the canal, the city had the right to make the bond, the same as it would have had the right to bind itself to indemnify any person fearing injury to his property by reason of the work.

Yours, truly,

C. K. DAVIS,
United States Attorney.

Hon. A. T. AKERMAN,
Attorney General, Washington, D. C.

SAINT PAUL, MINNESOTA,
December 26, 1871.

I am in receipt of your favor of the 20th instant, in which you write, 'In my letter of the 29th of August last I directed you, in pursuance of a suggestion from the War Department, to confer with Mr. Carpenter upon the preparation of the bond. Mr. Carpenter informs me that you have not done so. Will you explain how this is, and how the matter stands?"

The history of the case is this, in brief:

May 2, 1872, bill of complaint filed.

January 9, 1872, writ of injunction issued and served.

Before the writ had issued, and on the 7th of June, 1871, the Secre-

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tary of War addressed a letter to the Attorney General, in which he wrote, "I have now the honor to request that the United States district attorney of Minnesota be instructed to consent to the withdrawal of the injunction and the staying of further proceedings, on the execution of a proper bond by the city of Du Luth, in the sum of $100,000, to this Department, for the United States, conditioned," &c. This letter was transmitted to me from your Department, under cover of a communication dated June 8, 1871, signed by Hon. B. H. Bristow, to which letter I respectfully refer. The letter was received by me on the 12th of June.

I thought this concession had been obtained from the War Department by *ex parte* and untrustworthy representations; so, on that same day, I addressed a letter to the attorney general of Wisconsin, (to whom Mr. Carpenter had, in a letter, previously directed me to refer, saying in that letter "what he says I stand by,") inclosing copies of these letters from the Departments. My object in so doing was that Mr. Carpenter and the gentleman with whom he had directed me to confer might, if thought best, obtain a revocation of these instructions to me.

No such revocation ever came. The Du Luth authorities, by some means not known to me, knew as soon as I received these instructions, and on the 17th of June, 1871, their attorney came to my office with a bond, conditioned as expressed in the letter from the War Department to you.

Under this state of things I considered myself to be under peremptory instructions, and I, therefore, with great reluctance, accepted the bond, and, by written stipulation, filed June 17, 1871, withdrew the injunction which had been obtained after so much labor on my part.

On the 19th of June, 1871, the counsel for Du Luth appeared before the United States circuit court, which was then in session in this city, and, on a statement of the foregoing facts, obtained an order staying indefinitely all proceedings in the suit by the United States.

On the 18th of July, according to directions, I sent to your Department a copy of the bond.

So that everything had been consummated prior to my receiving your letter of August 29, 1871, from which an extract is hereinbefore given.

I have never heard a word from Mr. Carpenter since.

I respectfully suggest that in what I have written a full and satisfactory explanation of my action will be found.

Very respectfully,

C. K. DAVIS,
United States Attorney.

Hon. A. T. AKERMAN, *Washington, D. C.*

SAINT PAUL, *December* 13, 1871.

I am in receipt of your esteemed favor, of the 8th instant, inclosing the communication from General Humphreys to the Secretary of War, in relation to extending the time in which to construct the dike at Du Luth.

I can see no objection to granting the request.

Yours, truly,

C. K. DAVIS,
United States District Attorney.

Hon. A. T. AKERMAN,
Washington, D. C.

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SAINT PAUL, *December* 28, 1871.

I am in receipt of your letter of the 23d instant, inclosing a letter from Senator Carpenter, and requiring me to explain why the directions of the Department of Justice had not been complied with.

In my letter of yesterday I gave an explicit *résumé* of the history of this case, and of my own action, and trust it will be found satisfactory.

I have a word to say as to Mr. Carpenter's letter, which you inclose.

In the first place, I was never, as Mr. Carpenter assumes, or rather asserts, directed to require a bond signed by individual sureties. The words of the letter from the War Department to your Department, of June 7, 1871, of which a copy is before me as I write, are, "I have the honor to request that the United States district attorney for Minnesota be instructed to consent to the withdrawal of the injunction and the staying of further proceedings in the matter, on the execution of a proper bond by the city of Du Luth, in the sum of $100,000," &c., &c.

In your letter to me of June 8, in which was inclosed this letter from the War Department, from which I have given an extract, you direct me to comply with the Secretary of War's request.

What I did in the premises, upon these explicit orders, is detailed in my letter to you dated yesterday.

Mr. Carpenter is entirely right in his assumption that "the city of Du Luth has acted in bad faith from beginning to end, and that it has not made, and does not intend to make, such a canal as will protect the harbor of Superior."

I was convinced of this when I was advised of the extraordinary action of the War Department, and it was under this conviction that I did, as I wrote yesterday, immediately communicate with the attorney general of Wisconsin, to whom Mr. Carpenter had directed me to refer, saying, "What he says I stand by."

I respectfully request that this letter and that of yesterday may be called to the attention of Mr. Carpenter.

Very respectfully,

C. K. DAVIS,
United States Attorney.

Hon. A. T. AKERMAN,
Washington, D. C.

SAINT PAUL, *January* 6, 1872.

I am in receipt of your esteemed favor of January 2, 1872.

I regret exceedingly that my action is deemed censurable in the least, for I certainly considered that I was acting under explicit instructions, with the expediency of which I had nothing to do, however distasteful to me they may have been. I thought the bond to be a "proper" one, conditioned as it was in the language of the letter from the War Department to your Department. I never heard anything of "individual sureties" to that bond until I encountered the expression in the letter from Mr. Carpenter to you of December 20, 1871.

In regard to the first error which I am deemed to have committed, I did communicate with the professional gentleman with whom Mr. Carpenter had directed me to confer. This was done on the same day on which I received the letter from the War Department and from the Attorney General. I inclose a copy of my communication. It is addressed to Hon. P. A. Spooner, who was then assistant attorney general of the

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State of Wisconsin, Mr. Barlow being the attorney general. It was written to Mr. Spooner for the reason that he had represented Mr. Barlow all through the proceedings; had been at Saint Paul, and had argued the motion for an injunction *pendente lite* at Topeka, Kansas. To this letter I received no response.

In regard to the second error which I am deemed to have committed, I find, upon reference to your letter to me of August 29, 1871, that it directs me, "in pursuance of the suggestion of the War Department, to confer with Mr. Carpenter upon the preparation of the bond." I supposed that this instruction was given under an impression that the bond had not yet been prepared. In view of the fact that the bond had been executed and the injunction dissolved more than a month before, and of the fact that I had immediately, upon receiving instruction to accept the bond and dissolve the injunction, communicated these instructions by copy to the attorney general of Wisconsin, and received no reply from any person, I did not write to Mr. Carpenter personally.

I inclose, also, a copy of the letter which I mentioned in my communications of the 26th and 28th ultimo as having received from Mr. Carpenter.

Mr. Carpenter has known me personally from boyhood, and I am sure he cannot and does not think that I have willfully jeopardized the interests which he represents.

Yours, truly,

C. K. DAVIS,
United States Attorney.

Hon. A. T. AKERMAN,
Washington, D. C.

No. 3.

SAINT PAUL, *June* 12, 1871.

I have just received letters of which the inclosed are copies.

Through what influences they were obtained I know not, and I had no premonition of any such directions. I have said nothing to any one as yet as to their existence.

I received from Mr. Barlow a dispatch, in which he seemed surprised that the injunction had not been served. The record and order only reached me last Thursday night, and the injunction was in the marshal's hands on the next day—not, however, in time for the train. He went up Saturday, and I presume it is served by this time.

When the Du Luthites present the bond mentioned in the inclosed letters, it will, of course, be my duty to take the course which these letters dictate. I have thought it best to let you know of this new phase for the reason, principally, that I am extremely desirous that you shall feel that, so far as I am concerned, your interests have not been obstructed or hampered by unnecessary delay.

I was a little put out by Barlow's affectation of surprise in the telegram which I received and answered this morning.

Will you please see the governor about the printing and telegraph bill? I have paid them, and Mr. Barlow telegraphs that my account is allowed.

Yours, truly,

C. K. DAVIS.

Hon. P. A. SPOONER,
Madison, Wisconsin.

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No. 4.

DEPARTMENT OF JUSTICE,
Washington, April 20, 1871.

SIR: The district attorney of the United States for Minnesota has been instructed to institute proceedings in the proper United States court for that district to prevent the cutting of a canal across Minnesota Point, near Du Luth, that threatens to render useless the present navigable entrance to the Bay of Superior, in the improvement of which the Government has expended large sums of money.

I avail myself of your offer to render professional aid in the matter without expense to the United States, and have informed the district attorney that you will do so, and have instructed him to enter into communication with you upon the subject.

A copy of my letter of instructions to him is inclosed.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. M. H. CARPENTER,
Washington, D. C.

DEPARTMENT OF JUSTICE,
Washington, April 29, 1871.

SIR: I send you a copy of a letter of this date to the district attorney for Minnesota, stating that he can obtain information upon the subject of the Government improvements at the entrance of the bay at Superior City from Major D. C. Houston, now at Chicago.

Very respectfully, your obedient servant,

A. T. AKERMAN,
Attorney General.

Hon. M. H. CARPENTER,
Washington, D. C.

DEPARTMENT OF JUSTICE,
Washington, July 27, 1871.

SIR: I herewith transmit to you a copy of the bond of the city of Du Luth, in relation to the dike across the bay of Superior, and also a copy of a letter from the district attorney of Minnesota upon the subject.

I have sent copies also to the Secretary of War.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. M. H. CARPENTER,
Milwaukee, Wisconsin.

DEPARTMENT OF JUSTICE,
Washington, August 18, 1871.

SIR: The inclosed copy of a letter, addressed by me this day to the Secretary of War, shows my views of the proper course to be taken in

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reference to the bond of the city of Du Luth. If the specifications are procured I will immediately hand them to you.

It is apparent that the mistake in the business has arisen from the failure to consult all the counsel in the case in all of the steps taken.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. M. H. CARPENTER,
Milwaukee, Wisconsin.

DEPARTMENT OF JUSTICE,
Washington, December 18, 1871.

DEAR SIR: Are the legal proceedings in reference to the canal at Du Luth ended?

I ask this because Mr. Davis, the district attorney, has sent in his bill for compensation; and it is important that I should know whether his services are completed.

Very truly, yours,

A. T. AKERMAN.

Hon. M. H. CARPENTER,
United States Senate.

DEPARTMENT OF JUSTICE,
Washington, December 23, 1871.

SIR: Your letter of the 20th is received. I shall send a copy of it to Mr. Davis, and call for an explanation from him.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. M. H. CARPENTER,
United States Senate.

DEPARTMENT OF JUSTICE,
Washington, January 2, 1872.

SIR: I transmit copies of a letter dated 26th ultimo, received at this Department from Mr. Davis, district attorney of Minnesota, upon the subject of the canal at Du Luth, and of a letter in reply thereto from this Department to Mr. Davis, of this date, and I will thank you for your observations upon the matter.

Very respectfully, your obedient servant,

A. T. AKERMAN,
Attorney General.

Hon. M. H. CARPENTER,
United States Senate, Washington, D. C.

P. S.—Since the foregoing was written, another letter has been received from Mr. Davis, a copy of which is also inclosed.

A. T. A.

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No. 5.

NEW YORK, *June* 17, 1871.

DEAR SIR: In the matter of the injunction to restrain the city of Du Luth from cutting a canal across Minnesota Point, to destroy the harbor at Superior, Wisconsin, I understand that Du Luth proposes to give a bond to build a breakwater, &c., on condition that the injunction be dissolved.

In the absence of any statute authorizing the Government to take such a bond, I do not think it would be valid; and even conceding its validity, the bond would not maintain the breakwater.

The injury once done by cutting the canal cannot be repaired.

I trust this course will not be taken.

Very truly, yours,

MATT. H. CARPENTER.

Hon. A. T. AKERMAN,
Attorney General.

UNITED STATES SENATE CHAMBER,
Washington, July 19, 1871.

DEAR SIR: In that Du Luth matter, allow me to suggest that specifications should be obtained from the Chief of Engineers showing the kind, form, and dimensions of the dike, as agreed upon; and then the condition of the bond should be that the dike shall be completed by the 1st December next, according to the specifications attached or embodied in the condition, and to the acceptance of the Chief Engineer, or such assistant of his as he may designate to accept it.

If it is desired, if you will procure the specifications and forward them to me at Milwaukee, I will prepare the bond and forward it to Mr. Davis, at Saint Paul.

Very truly, yours,

MATT. H. CARPENTER.

Hon. A. T. AKERMAN,
Attorney General.

MILWAUKEE, *August* 3, 1871.

DEAR SIR: I have the honor to acknowledge the receipt of your favor 27th ultimo, inclosing copy of Davis's letter to you of 18th ultimo, and copy of the bond given by Du Luth in the case United States *vs.* Du Luth.

Mr. Davis expresses the opinion that the provision of the charter which authorizes the city to construct the canal authorizes the city to enter into such a bond. I cannot concur in this opinion. This bond is not given, in my judgment, for any purpose provided for by the charter, and is void.

But it is hardly worth while to discuss that question, for the reason that the bond, if valid in law, could not be collected in *two thousand years.* The bond of a municipal corporation, even when issued in pursuance of express statutory authority, cannot be collected by any process yet known to the courts. Judgments on the latter kind of bonds have been rendered in the Federal courts for the last fifteen years, but not one, it is believed, has been collected.

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I have, therefore, to suggest that sureties should be required to this bond, if in your opinion it is valid; and, therefore, to avoid that question, I would suggest that a new bond should be required to be given by individuals, to be approved by a judge of the court.

The form of the bond taken is wholly defective. The covenant to do a thing, not in a definite time, but "at such time as the said city may be able to do so," seems like trifling.

How is the ability of the city to be determined? I would refer to my last letter to you on this subject as indicating the proper course to be taken.

Very respectfully,

MATT. H. CARPENTER.

Hon. A. T. AKERMAN,
Attorney General United States.

UNITED STATES SENATE CHAMBER,
Washington, December 20, 1871.

DEAR SIR: Yours of the 18th, inquiring whether proceedings in reference to a canal at Du Luth are ended, is duly received, and in reply I have to say that, so far as I know, no proceedings have been taken since you directed Mr. Davis to require a bond in the sum of $100,000, signed by individual sureties, and to confer with me in reference to the form of such bond. A copy of your letter to him to that effect you inclosed to me, but I have not heard from him since.

Those proceedings ought to be retained and pushed forward. The city of Du Luth, as I am informed and believe, has acted in bad faith from beginning to end. It has not made, and does not intend to make, such a canal as will protect the harbor at Superior, and the injunction which was obtained, and which was dissolved by the interference and order of the Secretary of War, ought to be reinstated. My constituents at Superior City are very much dissatisfied, and I think with cause, at the course which the Government has pursued.

I respectfully but earnestly recommend that Mr. Davis should be peremptorily ordered to require the bond mentioned in your former communication to me, or in default thereof that he should apply to the court to renew the injunction, which was, unhappily, dissolved.

Very respectfully, yours,

MATT. H. CARPENTER.

Hon. A. T. AKERMAN,
Attorney General United States.

UNITED STATES SENATE CHAMBER,
Washington, January 27, 1872.

DEAR SIR: I have to acknowledge the receipt from your Department of a letter from your predecessor, dated the 2d instant, inclosing copies of two letters from Hon. C. K. Davis, United States district attorney at Saint Paul, to the Department, dated respectively December 26 and 28, 1871.

After all the proceedings mentioned in the letters of Mr. Davis, copies of which are before me, I received at Milwaukee from your Department what was said to be a copy of instructions issued to Mr. Davis, in-

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structing him to confer with me as to the form of a bond to be required from the city of Du Luth, or on its behalf, with individual sureties; and in case of said bonds not being given, to proceed and pray another injunction upon its original bill.

I judge from the copies of Mr. Davis's letters that he never received the original instructions in this behalf.

I respectfully invite your careful attention to this matter. Du Luth has acted in such bad faith in the whole business, and the interference of the War Department was so arbitrary, considering that the suit was substantially commenced and prosecuted by the State of Wisconsin, that our people feel, naturally, I think, very indignant, and think their interests have been trifled with.

I respectfully suggest that another communication should be addressed to Mr. Davis, to the effect of the former one, copy of which I received at Milwaukee, and the substance of which I have stated only from recollection, as it is not before me.

Truly, yours,

MATT. H. CARPENTER.

Hon. GEORGE H. WILLIAMS,
Attorney General of the United States.

P. S.—Since writing the above I have found a copy of a letter from the Department to Mr. Davis, dated January 2, referring to the letter of the Department of the 29th of August. That is the letter which, I judge from Mr. Davis's letters, he never received. The bond which he accepted was perhaps within the instructions under which he acted, but the letter, which must have been of August 29, directed him to consult with me in regard to the form of the new bond to be required, and, in default of its execution, to pray another injunction.

M. H. C.

No. 6.

DEPARTMENT OF JUSTICE,
Washington, April 20, 1871.

SIR: Referring to your communication of the 23d of September last on the subject of the canal across Minnesota Point, near Du Luth, I send you a copy of a letter of instructions from this Department to the district attorney for Minnesota.

I will thank you to inform me whether there is any engineer officer acquainted with the improvements which the Government has made at the entrance of the Bay of Superior, so that I can refer the district attorney to him for needed information upon the subject.

Very respectfully, &c.,

A. T. AKERMAN,
Attorney General.

Hon. W. W. BELKNAP,
Secretary of War.

DEPARTMENT OF JUSTICE,
Washington, May 17, 1871.

SIR: I have the honor to acknowledge the receipt of your letter of the 13th instant, inclosing certain papers showing the progress of the

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work upon the canal across Minnesota Point, near Du Luth. On the 29th day of April last I instructed the district attorney of Minnesota to institute legal proceedings to prevent the prosecution of that work.

Very respectfully, your obedient servant,

A. T. AKERMAN,
Attorney General.

Hon. W. W. BELKNAP,
Secretary of War.

DEPARTMENT OF JUSTICE,
Washington, June 8, 1871.

SIR: I have the honor to acknowledge the receipt of your letter of the 7th instant, and to inform you that a copy thereof has been sent to the United States attorney for the district of Minnesota, with a request that he consent to a withdrawal of the injunction against the agents of the city of Du Luth, restraining them from continuing the work on the canal across Minnesota Point.

Very respectfully,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

Hon. W. W. BELKNAP.
Secretary of War.

DEPARTMENT OF JUSTICE,
Washington, July 6, 1871.

SIR: I have the honor to acknowledge the receipt of your letter of the 1st instant, inclosing a communication from the Chief of Engineers in relation to the harbor of Superior City and the canal at Du Luth, and to inform you that I have sent a copy of that communication to the United States attorney for Minnesota.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. W. W. BELKNAP,
Secretary of War.

DEPARTMENT OF JUSTICE,
Washington, July 12, 1871.

SIR: I have the honor to acknowledge the receipt of your letter of the 10th instant, inclosing a report from the Engineer Bureau and the copy of another report from Major D. C. Houston, engineer at Chicago, relative to the obstructions to navigation in Superior Harbor, which inclosures, in pursuance of your request, will be transmitted to the district attorney for Minnesota.

Very respectfully,

A. T. AKERMAN,
Attorney General.

JOHN POTTS, Esq.,
Chief Clerk, War Department.

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DEPARTMENT OF JUSTICE,
Washington, July 14, 1871.

SIR: In answer to your letter of the 13th instant, inclosing a communication from the Hon. M. H. Carpenter, and one from the Chief of Engineers, upon the subject of the bond tendered by the city of Du Luth, in relation to the dike near Minnesota Point, I have the honor to say that I cannot satisfactorily determine whether such a bond would be valid and sufficient, without fuller information than I now possess, as to the extent of the corporate powers of the city of Du Luth, and unless the powers to execute such a bond (a power unusual in municipal charters within my knowledge) have been conferred upon that corporation, the bond would be invalid, and therefore I am of the opinion that it would be the wiser course to demand a special bond from individuals, as additional security, as suggested in your letter.

Very respectfully,

A. T. AKERMAN,
Attorney General.

JOHN POTTS, Esq.,
Chief Clerk, War Department.

DEPARTMENT OF JUSTICE,
Washington, July 27, 1871.

SIR: I herewith transmit to you a copy of the bond of the city of Du Luth, in relation to the dike across the bay of Superior, and also a copy of a letter from the district attorney of Minnesota, upon the same subject.

I have sent copies also to the Hon. M. H. Carpenter.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. W. W. BELKNAP,
Secretary of War.

DEPARTMENT OF JUSTICE,
Washington, August 18, 1871.

SIR: I have the honor to send you copies of two letters to me from the Hon. M. H. Carpenter, one dated July 19 and the other August 3, 1871, in reference to the bond of the city of Du Luth.

I think that Mr. Carpenter's exceptions to the bond are well taken, and therefore respectfully suggest that the specification mentioned in his letter of July 19 be furnished, and that the district attorney be directed to confer with Mr. Carpenter in the preparation of a proper bond, and, in the event that the city shall not furnish it, to institute further proceedings in the court to restore the injunction.

Very respectfully, your obedient servant,

A. T. AKERMAN,
Attorney General.

Hon. W. W. BELKNAP,
Secretary of War.

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DEPARTMENT OF JUSTICE,
Washington, August 29, 1871.

SIR: I have the honor to acknowledge the receipt of a letter from the War Department, of the date of the 26th instant, in reference to the bond of the city of Du Luth, and to inform you that I have transmitted copies of the same, and of the inclosed report of the Chief of Engineers, to the United States district attorney for Minnesota, and to Mr. Carpenter, as suggested in the letter of your chief clerk.

Very respectfully,

A. T. AKERMAN,
Attorney General.

Hon. W. W. BELKNAP,
Secretary of War.

DEPARTMENT OF JUSTICE,
Washington, December 7, 1871.

SIR: I have the honor to acknowledge the receipt of your letter of the 7th instant, inclosing a copy of a communication from the city attorney of Du Luth, requesting an extension of the time allowed for the completion of the dike at that point to April 1, 1872.

The city attorney requests that the period be extended until the 1st day of April, 1872. It appears from the indorsement of General Humphreys that he recommends an extension of time to the 15th day of March, 1872, which indorsement is approved by you.

In compliance with your request, I have transmitted said copy to the attorney of the United States for the district of Minnesota.

Very respectfully, your obedient servant,

B. H. BRISTOW,
Solicitor General and Acting Attorney General.

Hon. WM. W. BELKNAP,
Secretary of War.

No. 7.

WAR DEPARTMENT,
Washington City, May 13, 1871.

SIR: In connection with papers heretofore submitted to you on the same subject, with a request that application be made to the proper court of law to prevent the prosecution of work on the canal across Minnesota Point, near Du Luth, I have the honor to inclose reports of the engineer in charge of improvements on Lake Superior, &c., showing that work has been resumed on the canal.

Very respectfully, &c.,

WM. W. BELKNAP,
Secretary of War.

The honorable the ATTORNEY GENERAL.

UNITED STATES ENGINEER OFFICE,
Chicago, April 27, 1871.

GENERAL: In compliance with instructions, dated office of the Chief of Engineers, Washington, District of Columbia, March 28, 1871, I have

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the honor to report that dredging was resumed at the canal across Minnesota Point, near Du Luth, on the 24th instant.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

WAR DEPARTMENT,
Washington City, June 7, 1871.

SIR: Referring to previous letters from this Department, asking the institution of proceedings against the city of Du Luth, Minnesota, to restrain its agents, by injunction or otherwise, from continuing work on a canal across Minnesota Point, I have now the honor to request that the United States district attorney for Minnesota be instructed to consent to the withdrawal of said injunction, and the staying of further proceedings in the matter, on the execution of a proper bond by the city of Du Luth in the sum of $100,000 to this Department, for the United States, conditioned that the dike across the bay of Superior be completed, in a good and substantial manner, on or before the 1st day of December, 1871, and be maintained in such condition; and that said city of Du Luth also agree to complete the canal across Minnesota Point, in accordance with the plans specified in the accompanying letter from the city attorney of Du Luth of the 6th instant, indorsed by the Chief of Engineers under this date, at such time as the city may be able so to do.

Very respectfully, your obedient servant,

WM. W. BELKNAP,
Secretary of War.

The honorable the ATTORNEY GENERAL.

WASHINGTON, *June 6, 1871.*

SIR: On behalf of the city of Du Luth, permit me to draw your attention to the canal being constructed across Minnesota Point, at head of Lake Superior, and make a statement of facts concerning the same.

1st. Canal being constructed by city of Du Luth, under authority of State of Minnesota, to be 150 feet wide, 16 feet deep, and protected on sides by crib-work extending into Lake Superior, into about 18 feet of water.

2d. Plan contemplates contemporaneous construction of a dike or dam across Superior Bay, between Rice's and Minnesota Points, with ship-locks for exit and entry of such craft as navigate the bay.

3d. The canal at present is cut through the point so as to permit commingling of lake and bay waters, but is only about 50 feet wide and about 8 feet deep. Cribbing is about 75 feet into Lake Superior on the north side, with large quantity of material on hand ready to the further extension of cribbing. Object of this cribbing is to prevent the littoral action of the lake filling up canal during prevalence of storms. Expense already incurred in said work $50,000 and upward.

4th. No steps have as yet been taken to complete said dike, although it is and was a part of the plan. Estimated cost of the dike about $40,000.

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5th. The United States recently instituted a suit to prevent further construction of canal until the dike was built, and asked for a temporary injunction. Injunction granted.

6th. Under present situation of affairs, the city of Du Luth is in danger of losing the entire work already completed, owing to well-known Lake Superior causes, as, under the temporary injunction, she cannot even protect the work already complete.

From the foregoing the undersigned, on behalf of the city of Du Luth, respectfully asks that said city of Du Luth be allowed to go on and put the work already done in a safe and permanent condition, and finally complete the same in accordance with plans and specifications, and that upon said city executing a bond, in the sum of $100,000, to the United States, conditioned that said dike or dam be completed on or before the 1st of December, 1871, that then the United States district attorney for the State of Minnesota be instructed to consent that said injunction be dissolved, and further proceedings in said action of United States *vs.* City of Du Luth stayed, it being understood that said city of Du Luth is anxious and willing to build said dike so soon as her financial condition will permit, and that she makes this application in good faith, so as to secure for herself harbor facilities at an early day and accommodate her growing commerce.

Yours, respectfully,

J. J. EGAN,
City Attorney of Du Luth.

General A. A. HUMPHREYS,
Commanding Corps of Engineers,
Washington, D. C.

WAR DEPARTMENT,
Washington City, July 1, 1871.

SIR: Complying with the suggestion contained therein, I have the honor to inclose to you a communication from the Chief of Engineers, in response to a letter addressed to the Department by Hon. Matt. H. Carpenter, of Wisconsin, in reference to the obstruction likely to ensue to the main channel of the harbor of Superior, by reason of the location of a dike at the canal at Du Luth, Minnesota, and to request that you will refer the same to the United States district attorney for Minnesota.

Inclosed please find also copies of Senator Carpenter's letter and the inclosures to that of the Chief of Engineers.

Very respectfully, your obedient servant,

WM. W. BELKNAP,
Secretary of War.

The honorable the ATTORNEY GENERAL.

[Telegram.]

CHICAGO, ILLINOIS, *June* 26, 1871.

To General A. A. HUMPHREYS, *Chief of Engineers:*

Lieutenant Miller telegraphs as follows: "Width of canal 44 feet; depth from 6 to 16 feet; velocity variable, from four to six miles an hour; velocity at entry about the same; depth at entry 9 feet; water there shoaler than before canal was cut. Boats that came in then cannot enter now; no apparent cause for shoaling except canal."

D. C. HOUSTON,
Major of Engineers.

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OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., June 30, 1871.

SIR: In reference to the letter of the Hon. M. H. Carpenter, of the 24th instant, I send herewith a copy of telegram of 26th instant, from Major D. C. Houston, the engineer officer in charge of harbor works on Lake Superior.

It will be perceived—

1st. That the depth at the entrance to Superior City, ascertained by survey just made, is 9 feet, and is the same that it was a year ago, as shown on Major Houston's map of June 27, 1870; that the velocity of the current through the entrance is from four to six miles an hour, the width at the entrance being 420 feet.

2d. That the canal is 44 feet wide and 6 feet deep, (the least cross-section governs the discharge,) and the velocity of the current the same as through the natural entrance at Superior City.

Under such a state of facts, it is impossible that the discharge through the canal could have any appreciable effect in diminishing the depth of the natural entrance at Superior City. The simple statement that the velocity of the current through the natural entrance at Superior City is from four to six miles an hour is sufficient to prove incontestably that no decrease of depth in the entrance has been caused by a reduction in the flow of water through it.

It might be well to require of the city of Du Luth, in addition, that it should neither widen nor deepen the canal until the dike is finished, and that the construction of the dike should commence before the close of July, and be continued, with all practicable dispatch, until it is finished.

The city should be allowed, however, to secure the work it has already done from filling in, and, on the other hand, be required to prevent, by suitable works, the canal from widening and deepening, should such changes begin to take place.

The decision upon all these matters relating to this canal, including proper security for enforcing the immediate construction of the dike, rests with Mr. Justice Miller, who granted the injunction; and I would therefore suggest that this communication be sent to the proper United States attorney.

Those who represent the interests of the State of Wisconsin will, it is presumed, have the opportunity of being heard by the judge.

The letter of the Hon. Mr. Carpenter is returned, and there is herewith a copy of Major Houston's map of survey of the entrance to Superior City, June, 1870.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

LAW OFFICE OF CARPENTER & MURPHY,
Milwaukee, June 24, 1871.

DEAR SIR: Our people feel that a great wrong will be done them—that is, to the people of Superior—if the course which has been indicated shall be taken: that is, to allow Du Luth to destroy Superior, on giving a bond in the sum of $100,000 to maintain a dike at Du Luth.

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The suit that was brought was in the name of the United States, but it was really commenced by the State of Wisconsin, in the name of the United States. That is, the State employed counsel, sent its attorney general to Washington, and, on consultation between him and myself, it was thought doubtful whether the State or the city of Superior could proceed in name and form as a party. Therefore the Attorney General directed the district attorney at Saint Paul to commence proceedings and to act in concert with me as counsel, stating, I believe, that I would act without charge to the United States.

I drew the bill on which the injunction was allowed, and the State has been at all the expense incident to obtaining the injunction, and sent its attorney general, or his assistant, to argue the motion before the circuit judge. In this state of the case, to discontinue the proceedings without consulting the counsel of the State, on taking a bond the validity of which is very questionable, and the efficacy of which, even if technically valid, to secure the end proposed is still more doubtful, seems to be rather a hard proceeding against the State.

The canal has been opened, and its injurious effects are already manifest; as the engineers reported it would happen, so it has already, that the harbor at Superior is filling up and will very soon be utterly destroyed. I submit that, under the circumstances, the suit ought not to be discontinued; certainly not until the dike is finished.

Very respectfully,

MATT. H. CARPENTER.

General W. W. BELKNAP,
Secretary of War.

WAR DEPARTMENT,
Washington City, July 10, 1871.

SIR: Complying with the suggestion of the Chief of Engineers to that effect, I have the honor to inclose herewith, with a request that you will transmit the same to the district attorney for Minnesota, for his information, a report from the Engineer Bureau, inclosing a copy of another from Major D. C. Houston, engineer at Chicago, relative to the obstruction likely to ensue to navigation by the changing of the channel of Superior Harbor from its old to a new bed.

In the absence of the Secretary of War,

Very respectfully, &c.,

JOHN POTTS,
Chief Clerk.

The honorable the ATTORNEY GENERAL.

UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, June 29, 1871.

GENERAL: I have the honor to forward the accompanying reports from Lieutenant A. M. Miller and Mr. George C. Almy, in regard to the canal across Minnesota Point. I also send copy of the Lake Survey map of the Bay of Superior, showing the different projects proposed for improving the harbor of Du Luth, and the location of the canal now being constructed. I have indicated in pencil the position of the proposed dike, as I understand it.

I inclose also maps of the outlet of Superior Bay, showing the exten-

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sion of the piers up to date. From this it appears that the Minnesota pier has been extended directly across the old channel by which vessels entered the harbor. It was hoped that the scouring effect of the current would be sufficient to keep the channel open to the same depth it had prior to the pier extension. Work is now going on under two contracts, and both piers are being extended. According to the original project for this harbor, it was estimated that 42,000 cubic yards of dredging would be necessary, as the piers cross a bar where the least depth at the time of Lieutenant Miller's survey of last July is but 8 feet—so that, unless dredging is resorted to, vessels drawing over 8 feet of water will not be able to enter the harbor of Superior.

From the accompanying reports it is difficult to say that the shoaling reported is the result directly of the opening of the canal, as the shoaling may have occurred from other causes; and had the Minnesota pier been extended as far as it is now, the depth of water would have been reduced to nearly 9 feet. At the same time, nothing should be permitted which would have a tendency to diminish the strength of the current, for the bar over which the new channel is to pass has already been cut down, by the force of the current directed by the piers, 4 or 5 feet, as shown by reference to the small tracing inclosed, showing the state of the channel before any piers were built. What is shown as the channel on this tracing is now crossed by the Minnesota pier, and the present channel passes out close to the head of the Minnesota pier, from where it takes a northerly course.

If it is possible now to suspend work upon the canal until the dike is built, it seems to me that it should be done. If work is stopped now, I think the canal will close up, or that it can easily be closed by taking advantage of the state of the current. If the city of Du Luth is permitted to go on and widen the canal to its full width, I fear that the outlet at Superior will be seriously injured.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

[Extract.]

SUPERIOR CITY, WISCONSIN, *April* 30, 1871.

SIR: * * * * * * *

Last Monday, the 24th instant, I telegraphed you that dredging had been resumed at the canal, and yesterday the cut was sufficiently advanced to admit of the passage of a rapid current into the lake. No accurate measurements were taken, but it was generally considered that the difference in the water-level on the two sides of the point was at least 9 inches. Judge Clark, of Superior, claims to have taken, this past week, at two or three places farther down the point, measurements that show the water-level of the bay to be 11 or 12 inches higher than that of the lake. This, if true, is very unusual, and is owing to the immense body of water which has for several days been flowing out of the Saint Louis River. After the spring freshets have ceased the level of the lake will probably be about the same as the bay.

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Two or three days more dredging will enable small vessels to pass through the canal.

* * * * * *

Very respectfully, your obedient servant,

G. C. ALMY.

Colonel D. C. HOUSTON,
Corps of Engineers, U. S. Army, Chicago, Illinois.

SUPERIOR, WISCONSIN, *May* 1, 1871.

SIR: * * * * * *

The stream through the canal is swift and strong; it is between 30 and 40 feet wide; the depth is not exactly known, but is, I think, about 5 feet. The small steamer F. C. Fero passed entirely through yesterday. She draws 4 feet of water. The channel is known to have deepened somewhat since then. Having opened this passage for the flow of water into the lake, the dredge has now hauled back, and is at work deepening and widening the inner end of the canal. The rapidity of the stream is estimated at about six miles per hour, with a probable increase when the excavation is completed, and certain obstacles which now impede the flow are removed, unless in the mean time the level of the bay should subside, as of course it will whenever the current of the Saint Louis slackens. Enough of the practical working of the canal can now be seen to verify the opinion of the engineer board fully, for unless a dike is constructed between Minnesota and Rice's Points, the flow of water through this artificial channel must of necessity seriously weaken the current passing out at the natural entrance.

Legal measures now in progress will undoubtedly bring this work to a close very soon. I have seen the Attorney General's letter to the district attorney at Saint Paul; but *the cut is made*, and while the case is pending in the courts the influence of the work already performed will be steadily operating to the injury of the regular entrance.

Very respectfully, &c.,

G. C. ALMY.

Colonel D. C. HOUSTON,
Corps of Engineers, U. S. Army, Chicago, Illinois.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 8, 1871.

SIR: It will be perceived from the accompanying report of Major Houston, and tracings which I have the honor to transmit, showing the condition of entrance of Bay of Superior in 1866, before the present improvement was begun, and also the present extent of piers built, that the diminution of depth reported to exist at the entrance is occasioned by the extension of the pier on the Minnesota side. This extension has now crossed the entrance channel and reached a shoal lying outside, which vessels entering have now to cross. The current has not yet had time to open a new channel across the shoal to the full depth of the old channel.

This inconvenience is temporary, and was anticipated in the original design for this improvement, in which there is an estimate for dredging at this point, when found necessary, to prevent any temporary inter-

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ruption in or obstruction to navigation. The plan of improvement contemplates extending both piers beyond this shoal.

I beg to suggest that the accompanying report of Major Houston, and tracings, be transmitted, with a copy of this communication, to the Department of Justice, for the information of the district attorney at Saint Paul.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, May 3, 1871.

GENERAL: I have the honor to forward the inclosed extract from letter received this day from the foreman at Superior City in relation to the Du Luth Canal.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. Army, Washington, D. C.

UNITED STATES ENGINEER OFFICE,
Chicago, Illinois, May 6, 1871.

GENERAL: I have the honor to forward the inclosed extract from letter received this day, from the foreman at Superior City, in relation to the Du Luth Canal. A copy is sent to C. K. Davis, United States district attorney at Saint Paul.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brigadier General A. A. HUMPHREYS,
Chief of Engineers U. S. A., Washington, D. C.

WAR DEPARTMENT,
Washington City, July 13, 1871.

SIR: As connected with the matter of authorizing the city of Du Luth to continue the erection of a dike at the canal across Minnesota Point, in Wisconsin, on execution of a bond, the terms of which were stated in a previous letter to your Department June 7, I have the honor to refer to you a copy of a letter from Hon. Matthew H. Carpenter, bearing date the 11th instant, and also a letter from the Chief of Engineers upon the subject of said bond, and inviting special attention to those portions of the communications bearing upon the validity of a bond executed by the city of Du Luth, to submit for your decision the question whether such a bond would be valid and sufficient to justify the

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Department in accepting it and allowing the work to continue, or should be accompanied by special bonds from individuals as additional security.

In the absence of the Secretary of War.

Very respectfully, your obedient servant,

JOHN POTTS,
Chief Clerk.

The honorable the ATTORNEY GENERAL.

UNITED STATES SENATE CHAMBER,
Washington, July 11, 1871.

DEAR SIR: Your favor of the 3d, in reply to my letter of the 17th ultimo, is received. The objection suggested by me to the validity of a bond at the time I wrote that letter was based upon the idea that the bond would be given by individuals, or by the city of Du Luth with individuals as sureties. The validity of even such a bond I thought, and still think, doubtful, but on arriving in Washington I learned that only a bond of the city was to be required. This suggests a still graver difficulty. The bond of a municipal corporation is utterly void unless executed in pursuance of some authority of law. As no such thing was contemplated when the city of Du Luth was incorporated, and there has been no session of the legislature of Minnesota since the necessity for such a bond has arisen, it is very remarkable and entirely accidental if there is any provision of the charter which can be construed to authorize like this to protect the harbor at Superior, not at Du Luth.

You say the action of the Department "was in accordance with the views of the Chief of Engineers expressed in a report of which the inclosed is a copy, which are still regarded as sound."

On a question of civil or military engineering, I should say there was no higher authority than General Humphreys. But the validity of a bond given by a municipal corporation is hardly a question to be determined by the rules and principles of engineering, and as I believe such bond in this case is wholly void, I submit that the question ought to be referred to the Attorney General before the bond is accepted.

You also say: "As regards the validity of the bond of Du Luth and the adherence to the terms of the adjustment, if not carried out in good faith by the town, *compliance can be enforced* by an appeal to the United States court."

I am not aware that the court could enforce such an adjustment. The case is this: on a bill filed the court has enjoined Du Luth. It is now proposed, without the action of the court, by stipulation of parties, to *dismiss*, that is, dissolve, the injunction on the execution of a bond by the city. Breach of the condition of the bond by a failure of the city to make and maintain the dike, might be followed, of course, by an action on the bond. The city would defend that action upon the ground that the bond was void for want of authority to issue it, and there is little doubt the court would hold the defense to be good.

But what action the court could take in such case, upon the injunction dismissed by consent of parties, I am unable to perceive. But, suppose the court should hold the bond good and render judgment upon it, how is the judgment to be enforced?

The judicial courts have found themselves powerless in the Western States to enforce collection of judgments rendered on bonds authorized by law, and when the remedy for taxation was fully provided for by the law under which the bonds were issued.

If you have decided to let Du Luth build the canal, an order of the court should be obtained modifying the injunction so as to provide that,

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in case the city of Du Luth shall construct the dike, then the injunction to be dissolved, not before.

Very respectfully, your obedient servant,

MATT. H. CARPENTER.

Hon. W. W. BELKNAP,
Secretary of War.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., July 13, 1871.

SIR: In an interview just had with the Hon. Mr. Carpenter, he read to me a letter which he addressed to you on the 11th instant, concerning the removal of the injunction on the Du Luth Canal. He has fully explained to me his reasons for regarding the bond of the town of Du Luth void.

My reason for recommending the bond was that I thought the arrangement under which it was given would secure the construction of the dike during the present working season more effectually than any other arrangement, and I still think it would do so if the bond were not void or voidable.

Senator Carpenter suggests that that end could have been attained by maintaining the injunction until the dike was built, but permitting the town of Du Luth to secure the work already done by building the necessary crib-work, the injunction to be dissolved upon the completion of the dike.

Had I been aware that the bond of the town of Du Luth was substantially no security, or that the suggestion in reference to it would be regarded as a positive instruction to the United States district attorney, which he was not at liberty to modify in his discretion so as to secure the object sought, or that the removal of the injunction and the conditions of removal were not discretionary with the United States judge, I should have abstained from any other than a general recommendation that the court take such action and exact such security as it considered proper to attain the end sought; that is, the construction of the dike during the present year.

I do not know whether the injunction has been dissolved. If it has not been, and the suggestions as to its modification instead of its removal receive your approval, there may be time to communicate them to the court before its action.

I have no reason to question the good faith of the town of Du Luth, or of its agent, in accepting the proposition to build the dike this year, and to give sufficient security to insure its construction; nor have I, therefore, any reason to suppose that objection will be made by them to the substitution of a modified injunction instead of its withdrawal under the bond of the city. Should, however, the action of the court have been already taken, personal securities upon the bond may still be exacted. It has not yet been received at the War Department.

There is an additional security for the construction of the dike, namely, the withholding by Congress of appropriations for the breakwater at Du Luth until the dike is built.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

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WAR DEPARTMENT,
Washington City, July 14, 1871.

SIR: In accordance with your opinion expressed this day, I have the honor to request you to telegraph to the United States district attorney at Saint Paul to report by telegraph whether a bond has been taken in the Du Luth case, and whether the injunction has yet been dissolved, and to instruct him to take no further steps under the former instruction from your Department upon that subject until further fully advised in the premises.

In the absence of the Secretary of War.

Very respectfully, your obedient servant,

JOHN POTTS,
Chief Clerk.

The honorable the ATTORNEY GENERAL.

WAR DEPARTMENT,
Washington City, July 17, 1871.

SIR: I have the honor to respectfully request your compliance with the following telegram, this day received from the honorable Secretary of War, viz:

"See the Attorney General and request him to notify District Attorney Davis, at Saint Paul, to see that the bond of Du Luth has good sureties. Notify General Humphreys and Senator Carpenter of this action." * * * * * *

Very respectfully, your obedient servant,

JOHN POTTS,
Chief Clerk.

The honorable the ATTORNEY GENERAL.

WAR DEPARTMENT,
Washington City, August 22, 1871.

SIR: I have the honor to acknowledge the receipt of your letter, inclosing copies of others from Hon. Matthew H. Carpenter, in relation to the bond of Du Luth, and to say that instructions will be given to furnish the specifications referred to by Mr. Carpenter, and for the district attorney to confer with him in the preparation of a new bond of the character indicated.

Very respectfully, your obedient servant,

WM. W. BELKNAP,
Secretary of War.

The honorable the ATTORNEY GENERAL.

WAR DEPARTMENT,
Washington City, August 26, 1871.

SIR: In the absence of the Secretary of War, and by his direction, I have the honor to send herewith a report of the Chief of Engineers, relative to the bond to be required of the city of Du Luth, in the matter of the dike across the Bay of Superior, in which report the Chief of Engineers sets forth the specifications that it would be advantageous

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for the interest of the United States to require, and to request that the same be transmitted to the proper United States district attorney for his information, with a direction to confer with Hon. Matthew H. Carpenter in the preparation of the bond.

Very respectfully, your obedient servant,

JOHN POTTS,
Chief Clerk.

The honorable the ATTORNEY GENERAL.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., August 25, 1871.

SIR: In reference to the communication of the 18th instant, from the Department of Justice, concerning the bond of the city of Du Luth, suggesting that specifications should be obtained from this office showing the kind, form, and dimensions of the dike across the Bay of Superior, agreed upon to be inserted in such bond, I beg to reply that I requested Mr. Egan, attorney for the city of Du Luth, to have this office furnished with the plan of the dike the city is to build, but it has not yet been received here.

Major Houston, Corps of Engineers, in charge of harbor works on Lake Superior, has, by my direction, submitted a plan and estimate of cost for the construction of the dike, but it would not be judicious to require the city of Du Luth to build the dike in the manner proposed by Major Houston, since some other method of construction might be more useful for their purposes and equally effective for those of the United States.

I would recommend, therefore, that the bond specify merely that the dike shall be built in a substantial manner and to the satisfaction of the Secretary of War, and shall be completed not later than the 1st of December next, the Secretary of War to be furnished with a plan of the same, and to be authorized to have the dike inspected at any time by an officer of United States Engineers.

The bond should be given for the construction of the dike only, and not for the completion of the canal across Minnesota Point, all reference to the time or manner of completion of which should be omitted.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Brigadier General and Chief of Engineers.

Hon. W. W. BELKNAP,
Secretary of War.

No. 8.

Circuit court United States, district of Minnesota.

THE UNITED STATES OF AMERICA
versus
THE CITY OF DU LUTH AND OTHERS. } Bill of complaint.

I hereby certify that the within is a true copy of the original bill in chancery and the affidavit annexed to said bill delivered to me for ser-

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vice, and the notice of motion for an injunction and of the affidavits referred to in said notice.

U. S. MARSHAL.

IN EQUITY.

To the judges of the circuit court of the United States for the district of Minnesota.

The United States of America, complainants, bring this their bill of complaint against the city of Du Luth, a municipal corporation existing, created by and existing under the laws of the State of Minnesota, in the State of Minnesota, and W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W. Wheeler, partners doing business under the firm name of W. W. Williams & Co., citizens of the State of Minnesota; and thereupon your orators complain and say:

That the Saint Louis River, which is a part of the boundary between the State of Wisconsin and the State of Minnesota, the waters of which flow into Lake Superior at the city of Superior, in the county of Douglas, and State of Wisconsin, is navigable for about twenty miles above its outlet, and at its outlet, where it reaches the navigable waters of Lake Superior, so as to afford navigation from said lake up and down said river for about twenty miles from the outlet of said river, and large commerce is thereupon conducted. That at the outlet of said river your orators, for the purpose of facilitating said navigation, and keeping said outlet open for the purposes of said navigation, have already expended a large sum of money, to wit, over one hundred thousand dollars, by sinking crib-work loaded with stone, and building piers of crib-work extending into said lake, so as to narrow and deepen the channel of said river near and at its outlet, and that your orators are now engaged in extending and perfecting said improvements, and that the Congress of the United States, at its last session, appropriated the sum of sixty thousand dollars, to be expended by your orators for that purpose; that said improvements are necessary to protect and secure the navigability of said river, and contribute to that end by keeping said outlet clear of and free from substances which would otherwise be drifted to and deposited at the outlet of said river.

That exhibit No. 1, hereto attached, correctly represents the situation of the Saint Louis River, Superior Bay, the outlet of said river, a strip of land called Minnesota Point, being part of the territory of the State of Minnesota, and a strip of land called Wisconsin Point, being part of the territory of the State of Wisconsin; and your orators pray that the same may be considered and taken to be a part of this bill of complaint with the same effect as though the facts there represented were set forth fully herein.

That the defendant, the city of Du Luth, is now engaged in cutting, digging, and excavating a canal across, and nearly at right angles with, said Minnesota Point, so-called, at a place about six or seven miles from the outlet of said river, and opposite the widest part of said bay, which said canal, as contemplated, and in course of construction, is represented on said Exhibit No. 1; and which canal, if constructed, will connect the waters of said bay with the waters of said lake. That Superior Bay, so-called, is a widening of said river, and that the water of said bay, to be touched by said canal, is still water, the channel of said river

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running through the interior of said bay to the outlet of said river in Lake Superior; that the water in said bay which will be reached by said canal is several inches higher than the waters of said lake at the opposite side of Minnesota Point, to be touched by said canal; and that if said canal is constructed, the effect will be that a portion of the waters of said river will be diverted from their natural channel, and the current of said river will be divided and thus lessened at the point of its outlet into Lake Superior, and the earth and other substances which are drifted and moved by said river towards and into said outlet will remain there, and fill up and obstruct said outlet so as to render navigation at that point impossible or very difficult, and at the improvements which your orators are making at said outlet wholly worthless, and destroy the navigability of said river, at its outlet, and throughout the whole extent of said river, between the point where said canal touches said bay and the outlet of said river.

That the said defendant, the city of Du Luth, has employed and retained the said defendants, W. W. Williams, E. F. Williams, Rich. G. Coburn, and H. W. Wheeler, and entered into a contract with them to dig, excavate, and construct said canal, and that said defendants, Williams and Williams, Coburn and Wheeler, have already entered upon the execution of their said contract, and the construction of said canal, and unless enjoined and restrained by the process of said court will dig, excavate, and construct said canal, as hereinbefore stated; and that the digging and excavation of said canal will result in immediate and irremediable injury to the said improvements in progress of construction by your orators at the outlet of said river, and to the navigability of said river, as hereinbefore stated, and be a lasting and irremediable injury to the commerce now conducted on said lake and river.

To the end, therefore, that the defendants may, if they can, show cause why your orators should not have the relief herein prayed for, and that they may be compelled to answer all and singular the premises, and all the matters and things herein stated, as fully and particularly as if the same were here again repeated, and they severally thereunto interrogated, and the said defendants, except the city of Du Luth, may answer, as aforesaid, upon their several corporal oaths.

And that, pending this suit, and until the same shall be finally heard and decided by said court, the said defendant, the city of Du Luth, its agents, contractors, and officers, and each and every of the said defendants other than said city of Du Luth, their agents, contractors, and laborers, may be, by provisional injunction to be issued out of and under the seal of said court, strictly enjoined, restrained, and forbidden from proceeding to dig, excavate, or construct the said canal, or any canal, which shall connect the waters of said bay with the waters of said lake, across said Minnesota Point, so-called, until the further order of said court; and that the said defendants, and each and every of them, and their agents, attorneys, solicitors, counsellors, contractors, agents, and laborers, may be by the final decree of said court perpetually enjoined, restrained, and forbidden as aforesaid; and that your orators may have such further and other relief as the nature of their case may require, and as shall be agreeable to equity and good conscience.

May it please your honors to grant unto your orators a writ of injunction, to be issued out of and under the seal of said court, in due form of law, to be directed to the said defendants, the city of Du Luth, W. W. Williams, E. F. Williams, Rich. G. Coburn, and H. W. Wheeler, and to their officers, agents, contractors, and laborers, enjoining and restraining

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them, and each and every of them, in manner, form, and effect as aforesaid.

And may it please your honors to grant unto your orators the most gracious writ of subpœna, to be issued out of and under the seal of said court, to be directed to the said defendants, the city of Du Luth, W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W. Wheeler, strictly commanding them, and each and every of them, under a certain penalty, and on a certain day therein to be named, to be and appear before said court, and to stand to and abide by such order and decree as said court may make in the premises, and your orators will always pray, &c.

C. K. DAVIS,
District Attorney of the United States for the District of Minnesota, and of Counsel for the Complainant.
MATT. H. CARPENTER, *of Counsel.*

UNITED STATES OF AMERICA, *District of Columbia, ss:*

George R. Stuntz, being duly sworn, on oath, says: That he has heard read, and knows the contents of the foregoing bill of complaint, and that the same is true of his own knowledge.

GEORGE R. STUNTZ.

Subscribed and sworn to before me this 25th day of April, 1871.

D. W. MIDDLETON,
Clerk Sup. Court, U. S.

UNITED STATES OF AMERICA, *District of Columbia, ss:*

Junius B. Wheeler, being first duly sworn, on oath, says: That he is major of the Engineer Corps of the United States, and brevet colonel of the United States Army, now stationed on duty at the city of Washington. That he was heretofore stationed at Milwaukee, Wisconsin, and while there he had charge of the improvement mentioned in the foregoing bill of complaint, and at outlet of St. Louis River at Superior, Wisconsin, and had a general knowledge of the situation of the river, bay, and lake mentioned in said bill of complaint.

That the question of how to apply the funds appropriated to improve the harbor at the outlet of said river was discussed by the engineer officers having charge of the same, and submitted to the Chief of Engineers of the Army. The plan which was adopted was to contract the outlet of said river, known as the entry, by crib-piers extending outward into Lake Superior from the extremity of Minnesota Point and the opposite shore, as shown on Exhibit No. 1; and the money has been expended on this plan. The object of this particular improvement was to narrow the outlet and thus to confine the volume of water flowing out of the said river and bay into the lake, so as to scour and keep open a deep channel at the entrance.

Any diversion of the water which now flows through said outlet will certainly injure, if not entirely destroy, the present entrance. Any canal across Minnesota Point, allowing an outflow of waters from the bay into the lake, would, in my opinion, certainly produce this effect.

The littoral current of the lake sweeps along a large amount of sand and other material, which are thereby deposited in front of this entrance, forming a bar where the force of the river current is lessened by any cause whatever, thus obstructing navigation. The contraction of the piers confining the water gives greater force to the river current and removes the bar. The level of the upper portion of said bay is higher

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than the ordinary level of the lake; this difference of level with the volume of water from the river forms a current at the outlet. Whatever lessens this, injures the improvement at that point.

In my opinion, as an engineer, the excavation of a canal, as the foregoing bill states the intention of the city of Du Luth to construct one, would materially lessen the flow of water at the said outlet and greatly injure the improvement at that point; and the effect of natural causes will be to fill up the outlet and prevent navigation at that point, if said canal is so constructed and maintained.

J. B. WHEELER,
Major of Engineers and Brevet Colonel, U. S. A.

Subscribed and sworn to before me this 24th day of April, A. D. 1871.
D. W. MIDDLETON,
Clerk Supreme Court of United States.

THE UNITED STATES *vs.* THE CITY OF DU LUTH ET AL. } U. S. circuit court.

DISTRICT OF MINNESOTA, *ss:*

I hereby certify that I served the annexed affidavits and notice of motion, together with the bill of complaint and affidavit annexed thereto in the above-entitled case, on the city of Du Luth, by handing to and leaving with Clinton Markell, mayor of said city, personally, a true copy thereof, at Du Luth, in said district, May 12, 1871; and on W. Van Brunt, city clerk, J. J. Egan, city attorney, and J. B. Ray, vice-president of city council, personally, by handing to and leaving with each of them a true copy thereof at Du Luth, in said district, May 13, 1871; and served the same on Richard G. Coburn, personally, by handing to and leaving with him a true copy thereof at Saint Paul, in said district, May 12, 1871; and on H. W. Wheeler, personally, by handing to and leaving with him a true copy thereof at Oneota, in said district, May 13, 1871; and on W. W. Spaulding by leaving a true copy thereof with Mrs. Cuttell, his sister-in-law, at the usual place of abode of the said Spaulding at Du Luth, in said district, May 13, 1871; and I do further certify that I have made diligent search and inquiry for said W. W. Williams and E. F. Williams, in said complaint named, but cannot find them in this district.

AUG. ARMSTRONG,
United States Marshal,
By J. R. CLEVELAND,
Deputy.

Fees, $40.96.

United States circuit court, district of Minnesota.

THE UNITED STATES OF AMERICA *against* THE CITY OF DU LUTH AND W. W. WILLIAMS, E. D. Williams, Richard G. Coburn, and H. W. Wheeler, partners under the name of W. W. Williams & Co.

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To the above-named defendants:

You and each of you are hereby notified that, upon the bill of complaint heretofore filed herein and the affidavit thereto attached and other affidavits, of which copies are herewith served upon you, and upon the record and files in this case, I shall move on the 24th day of May, 1871, at 10 o'clock in the forenoon, before the Hon. Samuel F. Miller, a judge of said court, at the place where the sessions of the United States courts are held, in Topeka, in the State of Kansas, that the provisional writ of injunction prayed in said bill shall be allowed as therein asked, and for such other and further relief as may be proper; and you are further notified that I shall also use on said motion the map attached as an exhibit to said bill of complaint, of which a copy was heretofore served on you by the United States marshal.

C. K. DAVIS,
United States District Attorney, Minnesota.

STATE OF WISCONSIN, *County of Douglas, ss:*

Richard Relf, being sworn, says he is a civil engineer of fifteen years' practice; has resided for that length of time at the head of Lake Superior; is intimately acquainted with the waters putting into the head of said lake, and with the bay of Superior, formed by an enlargement of the Saint Louis, and of that of Saint Louis Bay, a like formation further up said river, and more particularly with the formation and character of said "entry" to Superior Bay, so called, or more properly the mouth of the Saint Louis River, where the combined waters of all the streams at the head of the lake empty into said lake; that said "mouth" is formed by two lateral spits of land projecting from the Minnesota and Wisconsin shores of the land, and known as Minnesota and Wisconsin Points; that said spits are formed of coarse sand and gravel thrown up by the action of the waves of the lake and deposited where the force of the waves was broken by the current of the rivers; that the natural width of said outlet since his acquaintance has been from 1,000 to 1,500 feet, with an average depth over the bar of from 8½ to 11 feet, dependent upon northeast storms upon the lake and freshets in the rivers; that very little *débris* is brought down by the waters of the Saint Louis River, and that little is held in suspense until carried miles into the lake; that the Nemadji or Left Hand River water carries a heavier sediment during freshets, which is carried beyond the bar and deposited in the lake from one to three miles out, very little, if any, finding a lodgment near the mouth of the river; that the depth of water in the channel depends upon the width of the outlet and the volume of water discharging; that the scouring force of the river must always exceed the force of the waves to prevent the formation of a bar; that heretofore the scouring force has been inadequate to prevent the formation of a bar across the mouth of said river; that the present Government improvements as far as they go—confining the volume of water to 400 feet in width, gives sufficient depth of water to their outer line, by having the whole volume of water to use as a scouring force; that the whole of said volume is necessary to keep said channel clear, and that every cubic foot of water turned out of the natural channel will detract so much from the scouring force and lessen the value of the present Government work; that the proposed canal at Du Luth will lessen the flow of water at the mouth of the Saint Louis from one-third to one-half, and leave the chan-

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nel as bad or worse than it was before any Government expenditure was made there; and further deponent saith not.

RICHARD RELF.

Subscribed and sworn to before me this 31st day of March, 1871.

THOMPSON RITCHIE,
Notary Public, Douglas County, Wisconsin.

UNITED STATES OF AMERICA,
State of Wisconsin, Office of the Secretary of State, ss:

The secretary of state of the State of Wisconsin does hereby certify that Thompson Ritchie, whose signature appears to the annexed instrument, was, at the date thereof, a notary public in and for the State of Wisconsin, residing in the county of Douglas, duly appointed and qualified, and empowered by the laws of this State to administer oaths, take depositions, acknowledgments of deeds, and other written instruments, and exercise all such powers and duties as by the laws of nations and according to commercial usages may be exercised and performed by notaries public; that full faith and credit are due and should be given to his official acts as such notary; that the said signature is believed to be genuine, and that the instrument to which this certificate is attached is executed and acknowledged in accordance with the laws of the said State of Wisconsin.

In testimony whereof I have hereunto set my hand and affixed the great seal of the State, at the capitol, in Madison, this 6th day of April, A. D. 1871.

[SEAL.]

JOHN S. DEAN,
Assistant Secretary of State.

STATE OF WISCONSIN, *County of Douglas, ss:*

Peter E. Bradshaw, being duly sworn, deposeth and says, he is and has been a resident of Superior, Wisconsin, since July, 1857, and that he is by profession a civil engineer; that he is acquainted with the works now in process of excavation and contemplated by the city of Du Luth, Minnesota, to wit: a canal across Minnesota Point, and a dike or mole across Superior Bay, both in Minnesota. As to the canal now in process of excavation. This canal is a cut across and through Minnesota Point, in Minnesota, about three-fourths of a mile from its base, intended to connect the waters of the Bay of Superior and those of Lake Superior by an artificial channel or canal 150 feet wide and 16 feet deep in the clear; that the Bay of Superior is a basin, in form of a parallelogram, about 1 mile wide and 7 miles long, and that it has two feeders, viz, the Nemadji River, at its southwest corner, and the Saint Louis River (much the largest) coming in on its westerly side, near its northern end; that it has one outlet only, to wit, the mouth of the Saint Louis River, which runs through the bay for the length of about 5 miles, by a broad, straight, deep channel; that said bay empties its waters over a bar, in its normal condition, with about 11 feet of water thereon. That the water of the Saint Louis River, where it widens out into the Bay of Superior, through the gate, (so called,) must be, and is, judging by the current of the river through said bay, nearly 6 inches higher than where said river discharges its waters, at the south-

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east corner of said bay, through the entry (so called) into Lake Superior, because the current of said river always flows through said bay to its outlet into said lake with considerable velocity.

That in the opinion of the deponent, founded on observation of the premises since 1857, a period of nearly 14 years, it is absolutely requisite that the whole scouring force of the Saint Louis and Nemadji Rivers be used to keep open the mouth of the Saint Louis River as against the tendency of the lake to close it by washing of sand from the same. That the canal above referred to is nothing more than a second opening or outlet to the Bay of Superior, different from the natural outlet or mouth of the Saint Louis, in this, firstly, that it is three miles nearer the principal fountain-head or inlet to the bay; that the water of the bay is higher at the canal than at the natural outlet; that it is a straight outlet, whereas the natural one is partly on a curve of 1,000 feet radius. Secondly, it is 5 feet deeper than the natural outlet.

Furthermore, with the same rate of current as at the natural outlet, (and, under the above-mentioned circumstance, your deponent believes it will be much greater,) this canal, 150 by 16 feet in the clear, would discharge nearly one-half the amount of water now discharged from the bay by its natural outlet, greatly to the detriment of the natural channel, and injuring of the United States Government works situated thereat, and now in process of construction. It would have a further tendency to lower the general level of the Bay of Superior, and to diminish the current (by diversion) of the Saint Louis River through the same, thereby allowing the deposit and consequent filling up of the bay and natural outlet by the Nemadji River, which brings down large quantities of sediment and earthy matter, but which is now carried out to the lake by the superior force of the current of the Saint Louis River. Furthermore, your deponent affirms and believes that the city of Du Luth has neither the power by law, or financially, to finish the above-mentioned canal; and if the same was not finished it would not only not benefit said city, but would greatly damage all other interests contiguous to said Bay of Superior, as well as greatly damage the interests of commerce by thus injuring and destroying the natural entrance to one of the largest and finest harbors on the great chain of lakes.

As to the dike or mole which said city of Du Luth proposes to build across the Bay of Superior, (for the ostensible purpose of preventing a diversion of the current of the Saint Louis River,) your deponent does not believe that said city has any authority by law, or any financial ability, or any *bona fide* intention to build the same; that to build said dike would diminish the water area of the Bay of Superior by nearly one square mile, thereby materially affecting the current, capacity, and use of said bay. That your deponent, as well as other residents of the port of Superior aforesaid, are owners of vessels, registered by the United States at said port; that said dike or mole would interfere with their rights and privileges under said registers, greatly to their detriment.

That the harbor lines of the Bay of Superior are not yet established by any competent authority, and your deponent believes that said contemplated dike or mole would greatly interfere with their correct and proper establishment. And further your deponent saith not.

PETER E. BRADSHAW.

Sworn to and subscribed before me this 7th day of April, 1871.

S. H. CLOUGH,
Circuit Judge.

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United States of America, State of Wisconsin, office of the secretary of state:

The secretary of the State of Wisconsin hereby certifies that Solon H. Clough, whose name appears subscribed to the annexed instrument, was at the date thereof judge of the eleventh judicial circuit of Wisconsin, duly elected and qualified, and that full faith and credit are due and should be given to his official acts.

In witness whereof I have hereunto set my hand and affixed the great seal of the State, at the capitol, in Madison, on this 6th day of April, A. D. 1871.

JOHN S. DEAN,
Assistant Secretary of State.

STATE OF WISCONSIN, *County of Douglas, ss:*

Thomas Clark, of lawful age, being duly sworn, says that he is a civil engineer; has resided in said county and vicinity since the year 1854; has made instrumental surveys in said county, and in the State of Minnesota, from Lake Superior up the Saint Louis River, to the distance of twenty miles or more; has measured and surveyed that portion of said river, from its entry into the lake aforesaid, upward to the distance of seven miles or more; that at the distance of about five miles above said entry said river passes between Rice's Point, in the State of Minnesota, and Conner's Point, in the State of Wisconsin, where the channel is about one hundred feet wide, and from forty to fifty feet in depth, and the shoal top-water line fifteen hundred or two thousand feet; the velocity of the currents at these points is from three to six miles an hour, the distance from the entry being five and a half miles. Affiant determines that the surface of the river at said points has a normal height or elevation of not less than six inches above that of the lake; that from the points down to the entry at the lake the river widens to a breadth of about one mile, between the Wisconsin and Minnesota shores, forming the harbor of Superior; that at the entry into the lake the former natural width was about one thousand feet broad; that during the last three years the United States Government has been engaged in improving said entry by constructing crib and rock works, which reduce the entry to about four hundred feet, where the current, with the normal volume of the Saint Louis River, is and will be maintained at the mean velocity of four miles, and such action of the current, with the completed Government works, will maintain and perpetuate the channel, at the depth of sixteen feet, into the lake and up the river, thus giving to the State of Wisconsin a commercial water front of five and a half miles, and to the State of Minnesota not less than eight miles of like front upon one of the best harbors on the whole chain of lakes; that citizens and owners of property in Wisconsin have, at great expense, improved and built wharves, warehouses, and mills, upon lands abutting upon said river and harbor, whereby their commerce, manufacturing and industrial pursuits, sustain a permanent population of over one thousand souls, with good dwellings, school-houses, churches, and public buildings; that citizens of Wisconsin have, by material aid, participated in procuring land-grants from the public domain by Congress, to construct the Lake Superior and Mississippi Railroad, and the Northern Pacific Railroads, which roads are now completed respectively, from said harbor to the Mississippi River; that the carrying trade of said railroads will give employ-

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ment to not less than fifty lake crafts this season, and within five years not less than five times that number, which, in stress of weather, will resort to said harbor for refuge as well as commerce. That the corporate authorities of the city of Du Luth, in the county of Saint Louis, State of Minnesota, by their agents, servants, and contractors, are engaged in cutting a canal fourteen feet in depth and one hundred and fifty feet in width; that said canal will draw off the water of and from the Saint Louis River, five miles above the "entry," and reduce the force and velocity of the current at the entry, so much below its due force, that the channel will not be kept sound to its required depth, as designed by the United States engineers; that said canal cannot by any force or means be cut and lined by piles or cribs in time for business this spring, while it will, by depriving the entry of its due volume and force, defeat the designs of the Government improvement; that said canal, with the dike designed in connection with it, will confine the commerce and shipping to a small basin at the railroad depot, and cut off the said harbor and shipping in it from access to the railroad depot, as now located on that side of the new common harbor of both Minnesota and Wisconsin; that the proposed artificial works, the said canal and dike, are designed to confine the commerce of the said nationally endowed railroads to a narrow basin of less than a square mile of shoal water, to the exclusion of six square miles of the natural harbor; that there is natural commercial water fresh on said artificial basin, while there are at least five miles on the Wisconsin side, and a like distance on the Minnesota side of the harbor, available for wharves and docks fronting on the harbor.

THOMAS CLARK.

Sworn to and subscribed before me this 1st day of April, A. D. 1871.

S. H. CLOUGH,
Circuit Judge.

DISTRICT OF MINNESOTA, *County of Ramsey, ss:*

George R. Stuntz, of the city of Du Luth, and county of Saint Louis, in said State, being duly sworn, deposes and says that he is a resident of said city, and that he has resided at the head of Lake Superior for the last eighteen years past; that he is an engineer and surveyor by profession, and in that capacity has been connected with various Government works, and that during the years 1859, 1860, and 1861, he had charge of the meteorological instruments at Superior City, under the direction of Captain George G. Meade, then in charge of the coast survey of the northwestern lakes; and that during said three years that he had charge of said instruments, he took daily observations of the water-level, both with a plain and with a self-registering tide or water gauge, and that he has made constant observation of the effects of the river currents and the breaker action on the shores of the lake; that he is acquainted with the locality, and the nature of the Government works now being put in to protect and deepen the channel at the mouth of the Saint Louis River, and leading into the bay of Superior; and that the piers now being constructed by the Government are so located and placed as to secure the right amount of scouring action of the current of the Saint Louis River, to remove the sands and afford a sufficient and safe channel into said bay, where said works are completed; that he is acquainted with the locality of the canal now being cut by the city of Du Luth; that said canal is about two and one-

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eighth miles from the gate or point where the Saint Louis River enters into the bay of Superior, and that the difference of level from this gate to the entry, where the Government works are now being put in, is sufficient to create quite a strong current from said gate to said entry, the distance being about five and one-eighth miles. The average depth of the water between the gate and the proposed canal is more than five feet, and sufficient to furnish an unlimited supply of water to any canal, be it narrow or wide; and that he verily believes that if the proposed canal is cut to the depth of sixteen feet and of the width of one hundred and fifty feet as proposed, that it will drain one-half of the volume of water of the Saint Louis River by the accelerated current of the shortest route through said canal, and that the consequent diminished scouring action at the entry will cause that channel to fill up with sand by the breaker action of the lake in that proportion; and that if said canal is cut, and protected by piers extended into the lake, these piers will effectually stop the accretions of sand and gravel that are constantly brought up the north shore of the lake by the heavy northeast winds, and deposited on Minnesota Point; that said point, being composed of light sand, wastes more or less every year by the high winds, and that if these accretions are so stopped, that said point will, in a short time, be reduced to a low reef or shoal, and freshets will be liable to cut one or more new channels across the same, and destroy the bay of Superior as a harbor of refuge; and further, that he is credibly informed and verily believes that the city of Du Luth is using extraordinary exertions to cut this canal, so as to connect the bay with the lake, and if they are allowed to deepen and widen this cut there is imminent danger, in case of high water this spring in the Saint Louis River, that great and irreparable damage will be done to the harbor.

GEORGE R. STUNTZ.

Subscribed and sworn to before me May 2, 1871.

H. E. MANN,
Clerk of said Court.

[Seal U. S. circuit court, district of Minnesota.]

STATE OF WISCONSIN, *County of Douglas, ss:*

Peter E. Bradshaw, being duly sworn, says that he is a civil engineer by profession; that he is conversant with the work now in progress at the Du Luth Canal, so called; that he visited the work on yesterday afternoon, April 30, ultimo, for the purpose of observing the action of the current now pouring through said canal or cut; that the cut, when observed by affiant, was about forty feet in width and of an average depth of about four feet, which depth was gradually increasing; and this affiant says that, in his opinion, said current was flowing at the rate of not less than six miles per hour from the Saint Louis River, or bay of Superior, into the lake.

And this affiant further says that he believes the effect of said current through the canal will be to widen the breach through Minnesota Point to an extent much wider than now exists, as also to increase the same to a greater depth, and that the result to the harbor of Superior and to the entry at the mouth of the Saint Louis River will be incalculably injurious if said cut is suffered to remain unstopped.

And this affiant further says, that in his opinion the only way to prevent the said cut or canal from being widened and deepened by the

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action of the current aforesaid, is to build a bulkhead or bank across the said excavation or canal, which could be done, in the opinion of this affiant, at an expense of from five hundred dollars to one thousand dollars.

PETER E. BRADSHAW.

Subscribed and sworn to before me this 1st day of May, 1871.

HIRAM HAYES,
Notary Public, Douglas County, Wisconsin, and United States Commissioner for the Western District of Wisconsin.

STATE OF WISCONSIN, *Milwaukee County, ss:*

D. C. Houston, brevet colonel and major of United States Engineers, being duly sworn, deposes and says, that he is now in charge of all harbor improvements being prosecuted by the United States Government on Lake Superior and on the west shore of Lake Michigan, and has had charge of such improvements since June, 1870, and has now in his possession all surveys, maps, and reports pertaining to the various localities and improvements now being made; that he is acquainted with the improvements being made by the Government at the mouth of the Saint Louis River, near Du Luth, and with the location of the canal proposed to be constructed through Minnesota Point, at or near the City of Du Luth, having been personally on the ground; that his opinion having been asked as to the effect of cutting a canal through said Minnesota Point, upon the present outlet of Superior Bay, this deponent states that he regards such an undertaking as highly dangerous to the existence of the present outlet now being improved by the United States Government at great cost; that the effect of such a canal will be to divert the current of the Saint Louis River from the present outlet, thus reducing the scouring force which is necessary to maintain the channel aimed at and sought to be improved and maintained by the work now in progress by the Government; that the nearer the cut or canal is to the mouth of the Saint Louis River, that is to say, the nearer the cut through Minnesota Point shall be made to the point where the Saint Louis River discharges into the bay of Superior, the greater will be the injury sustained by the channel from the bay of Superior to the lake, now being improved by the United States Government.

D. C. HOUSTON,
Major of Engineers.

Subscribed and sworn at Milwaukee City, State of Wisconsin, this 10th day of October, A. D. 1870, before the subscriber, a commissioner in and for the State of Wisconsin, duly appointed by the governor of Minnesota, and duly qualified and authorized to take the acknowledgment of deeds and other instruments in writing, and to take depositions and administer oaths to read and use in the State of Minnesota.

In testimony whereof I hereto set my hand and affix my official seal the day and year the last above written, at my office in the city of Milwaukee, county of Milwaukee, and State of Wisconsin.

[SEAL.] FRANCIS BLOODGOOD,
Commissioner, &c., for Minnesota, at Milwaukee, Wisconsin.

STATE OF WISCONSIN, *County of Douglas, ss:*

Thomas Clark, of lawful age, being duly sworn, says that he is a civil

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engineer; was engaged in surveys and examinations in and around the bay of Superior during the week ending the 29th day of April, A. D. 1871; that the profile herewith, marked A, correctly shows the relative elevations of Lake Superior and the bay of Superior; that the flow of the water at the mouth of the Saint Louis River is from ten to twelve miles an hour—under the spring flood the water in the bay being ten inches higher—in the bay immediately above the mouth. On the afternoon of the 29th day of April aforesaid, affiant went to the Du Luth cut-off, where men and machinery were at work in removing the earth and gravel, admitting the water of the Saint Louis River and Bay of Superior, or so-called Du Luth Bay, to begin to flow into the lake, at which place the bay and river was found to be over fourteen (14¼) inches higher than the lake's surface; that a deposit of ice at the lake end of the Du Luth cut-off temporarily checks the flow of the water; that from known physical laws, the elevation, temperature, force, and velocity of the river and bay water through the cut-off, it is certain to result in abraiding the earth and gravel so as to open the breach to the width of 25 or 30 feet, and from 5 to 8 feet in depth, within twenty-four hours, without further manual or mechanical labor, and this affiant further says that in his opinion the only way to prevent the said cut or canal from being widened and deepened by the action of the current aforesaid is to build a bulkhead or bank across the said excavation or canal, which can be done, in the opinion of this affiant, at an expense of from five hundred dollars to one thousand dollars.

THOMAS CLARK.

Subscribed and sworn to before me this 29th day of April, 1871.

HIRAM HAYES,

Notary Public, Douglas County, and United States Commissioner for the Western District of Wisconsin.

STATE OF WISCONSIN, *County of Douglas, ss:*

William H. Newton, of lawful age, being duly sworn, says that he is a civil engineer; that on the 29th day of April, 1871, he assisted in measuring the difference in the levels of the bay of Superior, and of Lake Superior, that the profile herewith, marked "A," correctly shows the relative elevations of Lake Superior and the bay of Superior on that day. On the afternoon of the 29th day of April aforesaid, affiant went to the Du Luth cut-off, or canal, where a large and efficient stream-dredge and a gang of men were engaged in excavating and removing the earth and gravel in said cut-off, or canal; that the water had just begun to flow into the lake, at which place the bay and River Saint Louis was found to be about 14 inches higher than the lake's surface, by actual measurement. And this deponent further says that on the afternoon of the 30th day of April, 1871, he visited the said Du Luth cut-off, or canal, for the purpose of observing the action of the water; that a gap or gorge was there found, about 40 feet in width, through Minnesota Point, with a current running through into the lake from the river, by the operation of which the said gap, or cut, was rapidly deepening and slowly widening. That from close observation, affiant believes that the current was running at the rate of not less than six miles per hour into the lake. That the velocity of the curient was in his belief considerably retarded by the fact that the dredge, scows, and other obstacles lay in the cut toward the bay side, while at the lake end of the cut a sort of

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reef of frozen earth served to check the running of the water; that these obstacles being removed, affiant believes that the velocity of said current would have been not less than seven miles per hour; and that the depth of the stream through said cut at the time of observation last mentioned was about four feet by an average; and that this affiant was informed by the captain of the ferry-boat—which information affiant relies upon and believes—that the depth had increased 8 inches within the few previous hours.

And further, this affiant says that in his belief the tendency of said cut is rapidly to widen and deepen by and under the natural operation of the current.

W. H. NEWTON.

Subscribed and sworn to before me this 1st day of May, 1871.

[SEAL.] HIRAM HAYES,

Notary Public, Douglas County, Wisconsin, and United States Commissioner Western District of Wisconsin.

STATE OF WISCONSIN, *County of Douglas, ss:*

Peter E. Bradshaw, of lawful age, being duly sworn, deposes and says: that he is by profession a civil engineer; that he has carefully examined that part of the records of the United States coast survey taken at Superior, Wisconsin, that relate to the rise and fall of the water of the bay of Superior, in Wisconsin, with the following results, viz:

Height of water of bay—May 1, 1871, was three and thirty hundredths, (3.30.) May 2, 1871, was three and forty-seven hundreths, (3.47.) May 3, 1871, was three and eighty-three hundreths, (3.83.) May 4, 1871, was three and sixty-seven hundredths, (3.67.)

Further, that the mean height of said bay during May, 1870, was three and thirty-three hundredths, (3.33;) during June, 1870, was three and sixteen hundredths, (3.16;) during July, 1870, was three and thirty-three hundredths, (3.33;) during August, 1870, was three and thirty-seven hundredths, (3.37;) during September, 1870, was three and fifty-six hundredths, (3.56;) during October, 1870, was three and forty-three hundredths, (3.43.)

That during May 2d, 3d, and part of 4th instant, a heavy northeast wind, accompanied with heavy sea, prevailed continuously, thereby accounting for the extraordinary height of the water of the bay of Superior, as shown above.

PETER E. BRADSHAW.

Subscribed and sworn to before me this 4th day of May, 1871.

HIRAM HAYES,

United States Commissioner for the Western District of Wisconsin.

State of Minnesota, district court, seventh judicial district, Saint Louis County.

STATE OF WISCONSIN, *Milwaukee County, ss:*

D. C. Houston, brevet colonel and major of United States Engineers, being duly sworn, deposeth and says that he is now in charge of all harbor improvements being prosecuted by the United States Government on Lake Superior, and on the west shore of Lake Michigan, and has had charge of such improvements since June, 1870, and has now in his pos-

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session all surveys, maps, and reports pertaining to the various localities and improvements now being made; that he is acquainted with the improvement being made by the Government at the mouth of the Saint Louis River, near Du Luth, and with the location of the canal proposed to be constructed through Minnesota Point, at or near the city of Du Luth, having been personally on the ground. That his opinion having been asked as to the effect of cutting a canal through said Minnesota Point, upon the present outlet of Superior Bay, this deponent states that he regards such an undertaking as highly dangerous to the existence of the present outlet now being improved by the United States Government at great cost; that the effect of such a canal will be to direct the current of the Saint Louis River from the present outlet, thus reducing the scouring force which is necessary to maintain the channel aimed at and sought to be improved and maintained by the work now in progress by the Government; that the nearer the cut or canal is to the mouth of the Saint Louis River—that is to say, the nearer the cut through Minnesota Point shall be made to the point where the Saint Louis River discharges into the bay of Superior—the greater will be the injury sustained by the channel from the bay of Superior to the lake now being improved by the United States Government.

D. C. HOUSTON,
Major of Engineers.

Subscribed and sworn at Milwaukee City, State of Wisconsin, this 10th day of October, A. D. 1870, before the subscriber, a commissioner in and for the State of Wisconsin, duly appointed by the governor of Minnesota, and duly qualified and authorized to take the acknowledgment of deeds and other instruments in writing, and to take depositions and administer oaths to read and use in the State of Minnesota.

In testimony whereof I have hereto set my hand and affixed my official seal the day and year the last above written, at my office, in the city of Milwaukee, county of Milwaukee, and State of Wisconsin.

[SEAL.] FRANCIS BLOODGOOD,
Commissioner, &c., for Minnesota, at Milwaukee, Wisconsin.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wisconsin, April 3, 1871.

SIR: In reply to your inquiries as to the effect of cutting a canal across Minnesota Point, near Du Luth, upon the outlet to the Bay of Superior, I would state that in my opinion it would be highly injurious. The present outlet depends on the scouring effect of the current; and if the proposed canal is made, a portion of the current of the Saint Louis River will be diverted, thus diminishing the strength of the current at the present outlet. An examination of the Lake Survey chart of Lake Superior shows that there is a body of water at the west end of the lake known as the Bay of Superior and Allouez Bay, constituting really one sheet of water about 10 miles long and 2 wide. This bay is very shoal, and is separated from the lake by two narrow peninsulas, known as Minnesota Point and Wisconsin Point. There are three rivers emptying into this bay, the Saint Louis, and the Nemadji, and the Allouez. The outlet of the bay between the two peninsulas is opposite the mouth of the Nemadji.

The narrow peninsulas are composed of sand and gravel, and are evidently the result of the drift along the lake shores, due to the prevail-

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ing storms. The western portion of Lake Superior, for a length of 60 miles, is funnel-shaped, and narrows in this distance from a width of 30 miles to 10 miles. It is exposed to the most severe gales, so that the shores are washed by a strong littoral current setting westward. This current carries with it large quantities of shingle and sand. It is evident that the Saint Louis, the Nemadji, and Allouez Rivers formerly emptied directly into the lake, and that Minnesota and Wisconsin Points are composed of the drift along the lake shores, which was deposited in meeting the currents of the rivers. The process of drifting along the lake shores is constantly going on. The present outlet between Minnesota Point and Wisconsin Point is where the ratio between the scouring effects of the combined currents of the three rivers and the resistance offered by the drift is the greatest. The manner in which the present entrance was formed is now plain. The current of the Saint Louis River, the mouth of which was near the north shore, meeting the drift along that shore, was diverted to the south, those of the Allouez and Nemadji Rivers were directed to the north, and eventually, by combining their forces, maintained the present outlet. The Government is now at work improving this outlet, on the plan of confining the channel by parallel piers, and trusting to the channel to maintain it.

Now, it is evident that if an additional outlet is made, like the canal at Du Luth, that the velocity of the current at the present outlet will be diminished, and the effect of the present improvement will be lost. If this velocity is reduced beyond a certain limit, the channel at the mouth will be barred up by the action of the lake. The proof that this is so is to be obtained by observation and experience in similar cases. The Milwaukee River is a case in point. Before the present improvement was made the river ran for a distance of three-fifths of a mile in a southerly direction, parallel to the lake shore, before emptying into the lake. Between the river and the lake was a narrow sand-spit, evidently formed by the drift along the lake shore caused by northeasterly winds. The current of the river was not sufficient to overcome this, and it was consequently diverted to the south. When the improvement was made a cut was made through the sand-spit and it was protected by parallel piers. This drift was stopped by the piers, and the entire current of the river directed through the cut; the old mouth filled up rapidly, and is now completely closed. Frankfort and White Lake Harbors, on the east side of Lake Michigan, are illustrations of the same thing. The principles involved are illustrated in nearly all the lake harbor improvements.

The distance from the present mouth of the St. Louis River to the proposed canal is about two miles, and the distance to the present outlet of the Bay of Superior is nearly five miles. The velocity of a stream depends upon the inclination of its surface. It is evident that the inclination from the present mouth of the Saint Louis River to the canal will be greater than to the present outlet of the Bay of Superior, and consequently the velocity of the canal will be greater than at the present mouth—the lake-level being the same as both mouths. It is very probable that the effect would be, in time, to entirely close up the present outlet, unless the costly expedient of dredging is resorted to.

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

His Excellency LUCIUS FAIRCHILD,
Governor of Wisconsin, Madison, Wisconsin.

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I do solemnly swear that the facts and opinions set forth in the foregoing letter are true, to the best of my knowledge and belief.

D. C. HOUSTON,
Major U. S. Engineers, Brevet Colonel U. S Army.

Subscribed and sworn to before me this 6th day of May, A. D. 1871.
[SEAL.] PHILIP A. HOYNE,
United States Commissioner, Northwestern Illinois.

STATE OF WISCONSIN, *County of Douglas, ss:*

Thomas Clark, of lawful age, being duly sworn, says that he is a civil engineer; has resided at the head of Lake Superior during the last sixteen years; is familiar with and has kept meteorological records of rains, winds, and floods, action and effect of the same during the said fifteen years; that the spring flood of 1871, up to this date, has been less than the average of such floods; that on the 29th day of April, 1871, he measured the difference of level between the lake and bay of Superior; that the result of said measurement is shown by the annexed profile, marked A; that at the time of said measurement there was no wind blowing from any direction; that the rain-fall of March and April, 1871, was not in excess of the average; that on two or three occasions the Bay of Superior and Saint Louis River have been under rain-floods raised two feet higher than they were under that of April last; that previous to 1868, the northeasters have occurred four or five times a year between April and November, the force of the wind rating from twenty to forty miles an hour; on two occasions the rate has been up to sixty miles an hour; that the effect of such winds during the floods is to create strong littoral currents up the shores of the lake which abrade the shores and deposit gravel, sand, and earth along the points inclosing the Bay of Superior; that the full force of the Saint Louis volume is necessary to defeat the formation of a bar at the mouth of the river; that to maintain the necessary depth at the mouth of the river, the same must be confined to a breadth of not over three or four hundred feet; that to serve the purpose of commerce and give safe entrance of vessels under heavy winds, an entry of less than 400 feet will endanger collisions; that the opening of a channel at Du Luth, as proposed, to a width of 150 feet, will necessitate the narrowing of that at the mouth of the river, thus giving to the harbor two impracticable and dangerous entries.

THOMAS CLARK.

Subscribed and sworn to before me this 5th day of May, 1871.
HIRAM HAYES,
United States Commissioner for the Western District of Wisconsin.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wisconsin, April 3, 1871.

SIR: In reply to your inquiries as to the effect of cutting a canal across Minnesota Point, near Du Luth, upon the outlet of the Bay of Superior, I would state that in my opinion it would be highly injurious. The present outlet depends on the scouring effect of the current, and if the proposed canal is made, a portion of the current of the Saint Louis River will be diverted, thus diminishing the strength of the current at

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the present outlet. An examination of the lake survey chart of Lake Superior shows that there is a body of water at the west end of the lake known as the bay of Superior and Allouez Bay, constituting really one sheet of water about ten miles long and two wide. This bay is very shoal, and is separated from the lake by two narrow peninsulas known as Minnesota Point and Wisconsin Point. There are three rivers emptying into this bay—the Saint Louis, and the Nemadji, and the Allouez. The outlet of the bay between the two peninsulas is opposite the mouth of the Nemadji.

The narrow peninsulas are composed of sand and gravel, and are evidently the result of the drift along the lake shores, due to the prevailing storms. The western portion of Lake Superior, for a length of 60 miles, is funnel-shaped, and narrows in this distance from a width of 30 miles to 10 miles. It is exposed to the most severe gales, so that the shores are washed by a strong littoral current setting westward. This current carries with it large quantities of shingle and sand. It is evident that the Saint Louis, the Nemadji, and Allouez Rivers formerly emptied directly into the lake, and that Minnesota and Wisconsin Points are composed of the drift along the lake shores which was deposited in meeting the currents of the rivers. This process of drifting along the lake shores is constantly going on. This present outlet between Minnesota Point and Wisconsin Point is where the ratio between the scouring effects of the combined currents of the three rivers and the resistance offered by the drift is the greatest. The manner in which the present entrance was formed is now plain. The current of the Saint Louis River, the mouth of which was near the north shore, meeting the drift along that shore, was diverted to the south; those of the Allouez and Nemadji Rivers were diverted to the north, and eventually, by combining their forces, maintained the present outlet. The Government is now at work in improving this outlet on the plan of confining the channel by parallel piers, and trusting to the channel to maintain it.

Now it is evident that if an additional outlet is made, like the canal at Du Luth, that the velocity of the current at the present outlet will be diminished, and the effect of the present improvement will be lost. If this velocity is reduced beyond a certain limit, the channel at the mouth will be barred up by the action of the lake. The proof that this is so is to be obtained by observation and experience in similar cases.

The Milwaukee River is a case in point. Before the present improvement was made the river ran for a distance of three-fifths of a mile in a southerly direction, parallel to the lake shore, before emptying into the lake. Between the river and the lake was a narrow sand-spit, evidently formed by the drift along the lake shore, caused by northeasterly winds. The current of the river was not sufficient to overcome this, and it was consequently diverted to the south. When the improvement was made, a cut was made through the sand-spit, and it was protected by parallel piers. This drift was stopped by the piers, and the entire current of the river directed through the cut; the old mouth filled up rapidly, and is now completely closed. Frankfort and White Lake harbors, on the east side of Lake Michigan, are illustrations of the same thing. The principles involved are illustrated in nearly all the lake harbor improvements.

The distance from the present mouth of the Saint Louis River to the proposed canal is about two miles, and the distance to the present outlet of the bay of Superior is nearly five miles.

The velocity of a stream depends upon the inclination of its surface. It is evident that the inclination from the present mouth of the Saint

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Louis River to the canal will be greater than to the present outlet of the bay of Superior, and consequently the velocity of the canal will be greater than at the present mouth—the lake-level being the same at both mouths. It is very probable that the effect of the canal would be, in time, to entirely close up the present outlet, unless the costly expedient of dredging is resorted to.

Very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

His Excellency LUCIUS FAIRCHILD,
Governor of Wisconsin, Madison, Wisconsin.

I do solemnly swear that the facts and opinions set forth in the foregoing letter are true to the best of my knowledge and belief.

D. C. HOUSTON,
Major, United States Engineers, Brevet Colonel, U. S. A.

Signed and sworn to before me this 3d day of May, A. D. 1871, at Chicago, Illinois.

JULIUS CRONE,
Notary Public.

STATE OF WISCONSIN, *County of Douglas, ss:*

Thomas Clark, being duly sworn, says that he has for more than fifteen years last past been familiar with the action of the waters of the Saint Louis River, Bay and Lake Superior; that the annexed diagram, marked A, correctly shows the relative positions of the said bay and lake, and the estuary of said river; that Minnesota Point is composed of gravel and *débris* derived from the lake under the action of the littoral currents and from river sediment, sand, clays, and vegetable matter, interspersed into the bay margin of said point; that the compactness of said point is so dense that a given quantity of water could not percolate through it from bay to lake or lake to bay under any known flood-pressure in less than a half week's time; that said point is as well packed as the best of earth dams and canal embankments; that he examined the said bay on the 6th day of May, 1871; there was a slight easterly wind at the mouth of the Saint Louis River; midway between the lake and bay, where the same is flanked by the Government works on each side, the water was three inches higher than it was on the 29th day of April last, the current running out at the rate of two or two and a half miles an hour; that the water in the lower end of the bay was two inches higher than the lake; that a mile up the bay the water of the bay was two and a half inches higher than in the lake; that these differences give a difference at the Du Luth cut-off, or canal, of not less than five inches of higher water in the bay than in the lake; that a heavier northeasterly wind in a lower stage of water in the river will cause the lake water to flow into the bay at the mouth for a few hours until reaction is brought on by flow of water down the river; that the cut-off, or canal, will draw more water from the river in proportion to its width than the mouth of the river, because the water in the upper or Du Luth end of the bay will always be higher and have less distance to flow and greater fall to accelerate it than at the entry or natural mouth of the river, and because the greatest velocity of any stream is in and near its surface; that it is not the deep water which leads the currents, but the

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substructure on which the swifter surface water glides; that the water drawn from the Saint Louis River by the Du Luth Canal has its course over about eight feet water, a depth more than sufficient to maintain a greater velocity than along the longer channel and lesser proportional fall; that when the lake under a northeast wind discharges water into the bay at the natural mouth of the river, the water in the upper end of the bay will pile up a redischarge through the Du Luth Canal before it will react and reflow through the natural mouth; that there are generally *three* floods a year in the river—the spring, a midsummer, and fall flood; these create a current of six or eight miles an hour for three or four days each; it is these flood currents which resist the formation of the bar, and scour the channel deeper at the natural mouth of the river; all the force of these floods, and all of the redischarges are essentially necessary to keep the natural channel scoured to the requisite depth; and when the crib-work shall be completed pursuant to the present plan, such currents and forces will not fail of the Government engineer's design; but the Du Luth Canal, 150 feet wide and 14 feet in depth, will divert from one-third to one-half of the Saint Louis River water, and defeat the object of the Government works at the natural mouth of the river.

That the Sault Canal and locks having been deepened during the last winter to admit deeper draught vessels, the town authorities of Superior, in Douglas County, Wisconsin, to anticipate the completion of the Government works at the natural mouth of the river, on or about the 20th day of April, contracted with W. W. Williams & Co., (copy of which contract is hereto attached, A,) defendants in this action, to use their powerful steam-dredge, as soon as practicable, in removing from said channel any obstructions that might be there; affiant measured the work to be done and buoyed and staked it out, and was ready to operate said dredge on the 27th day of April last; that five or six days' operation of said dredge would have opened a straight, practicable channel for immediate use; that the said W. W. Williams & Co. have neglected and still do neglect to proceed to work under the said contract; but since the execution and signing thereof have been engaged in cutting the said Du Luth Canal; that on the 29th day of April last, he, affiant, was at said canal when and where the said W. W. Williams & Co., with the said dredge, were at work, and had effected a breach which in twelve hours' time would discharge not less than two and a half millions of cubic feet of Saint Louis River water per hour into Lake Superior; affiant further says that all of the above statements are derived from personal observation and instrumental measurements, and the conclusions are deduced from known physical laws recognized by experienced experts.

THOS. CLARK.

Subscribed and sworn to before me this 6th day of May, 1871.

HIRAM HAYES,

United States Commissioner for the Western District of Wisconsin.

This agreement made this 22d day of April, A. D. 1871, between W. W. Williams & Co., by John H. Upham, their agent and attorney in fact, thereunto duly authorized, of the one part, and the board of supervisors of the county of Douglas, in the State of Wisconsin, by Richard Relf, county clerk, thereto specially authorized and empowered by said board, of the other part, witnesseth:

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That the said W. W. Williams & Co., for and in consideration of the sum of one dollar to them in hand paid by the said second party, the receipt whereof is hereby acknowledged, and for and in consideration of the payment or payments hereinafter mentioned, covenant and agree to and with the said second party, that they will dredge the channel to the entry of the bay of Superior to the width of not less than fifty feet and to the depth of fourteen feet, under the direction of said board of supervisors, or some person whom they may appoint therefor; the sand, clay, or other material to be dredged and removed to a proper and suitable distance in dump-scows, and to be not less than six thousand (6,000) solid yards in measurement.

And the said first party covenants and agrees to commence dredging as aforesaid, as soon as possible, and to receive payment therefor in Douglas County orders, and at the rate of sixty-five cents in said orders per cubic yard, so as aforesaid dredged and removed; the measurement thereof to be made upon dump-scows, and under the supervision of the said board of supervisors. And the county may retain from the payment for said work ten per cent. thereof until completion of the work. And the said second party covenants and engages with said W. W. Williams & Co., to pay them for said dredging and carrying away of material from said channel, in Douglas County orders, at the rate of sixty-five cents for each cubic or solid yard thereof, and to pay weekly as the work progresses, reserving ten per cent. from and of the full consideration until the work is completed as hereinbefore specified, and that the said board will appoint a proper and competent person to oversee said work on the part of said supervisors, and will stake out the line of said channel by permanent buoys or other distinct and reliable marks.

And it is further understood and agreed that the material to be dredged as aforementioned shall be removed to a distance of not to exceed half a mile from the place of excavation, and to be dumped in not less than six feet of water, under direction of said second party or some person whom they may have appointed therefor.

And further it is covenanted and agreed by and between the parties to this contract that the said first party, upon the completion of the work hereinbefore specified, will, if requested by the said second party, dredge in the bay of Superior, under the direction of said board of supervisors, and engage to dredge and remove the material in consideration of payment in Douglas County orders at the rate of thirty-five cents per cubic yard.

And the said Williams & Co. agree to prosecute the work and business hereinbefore contracted with due diligence, until the same is completed.

In witness whereof the said parties have hereunto set their hands and seals the day and year first hereinabove mentioned.

W. W. WILLIAMS & CO., [SEAL.]
By J. H. UPHAM, *Agent.*

THE BOARD OF SUPERVISORS OF THE COUNTY OF DOUGLAS,
By RICH'D RELF, [SEAL.]
County Clerk.

In presence of—
HIRAM HAYES,
THOMPSON RITCHIE.

STATE OF WISCONSIN, *County of Douglas, ss:*

I, Richard Relf, county clerk of the county of Douglas, State of Wisconsin, do hereby certify and depose that the above is a true copy of the

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agreement entered into on the 22d day of April, 1871, between the firm of W. W. Williams & Co. and the board of supervisors of Douglas County, in the State of Wisconsin, and that deponent has compared said copy with the original agreement on file in his office.

RICHARD RELF.

Sworn to before me this 6th day of April, 1871.

HIRAM HAYES,
United States Commissioner for the Western District of Wisconsin.

United States court, district of Minnesota.

THE UNITED STATES
against
THE CITY OF DU LUTH, ET AL.

DISTRICT OF MINNESOTA, *ss:*

S. H. Clough, being duly sworn, says that he resides at Superior, in the State of Wisconsin; that after the defendants in this action had, on the 29th day of April, 1871, cut clear across Minnesota Point, the canal, which, in the bill of complaint in this action, they are charged to be engaged in cutting, and after, as the result of their said work, the waters of the bay of Superior flowed out into Lake Superior as on the said 29th day of April they commenced to flow, and thereafter for several days continued to flow through a constantly widening channel; such outflow of water from the said bay into said lake was finally checked and stopped by the filling up of sand and gravel, and the formation of a new beach at the outlet of said canal, as the effect of a northeast gale on said lake; but, nevertheless, a large portion of said canal, between the said newly formed beach and the said bay, remained still unclosed, and the defendants, in that portion of said canal, still continued the work of deepening and excavation with a steam-dredge, after such formation of a new beach, and were so engaged in deepening and excavating said canal, between said newly formed beach and the bay, and on Monday, the 8th day of May, instant, when deponent last heretofore saw said canal.

S. H. CLOUGH.

Subscribed and sworn to May 10, 1871, before me.

WM. A. SPENCER,
United States Commissioner, &c.

United States circuit court, district of Minnesota.

THE UNITED STATES
versus
THE CITY OF DU LUTH, ET AL.

DISTRICT OF MINNESOTA, *ss:*

Peter E. Bradshaw, being duly sworn, deposes and says that he is a civil engineer; that on the afternoon of April 30, 1871, he visited the canal or cut near the base of Minnesota Point, mentioned in the bill of complaint herein; that at that time the surface of said canal was about forty feet in width, and the depth from four to five feet, and the

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current was running at the rate of about six miles an hour from the Bay of Superior, so called, being an enlargement of the Saint Louis River, into Lake Superior through the said canal; and that it was then discharging from the bay into the lake about 1,400 cubic feet of water per second; that on the afternoon of May 4, 1871, deponent again visited said canal, and found that by means of a northeast storm, which took place between the 1st and the 3d of May, 1871, the end of said canal toward Lake Superior had been filled and obstructed by gravel and sand thrown into the end of said canal by the action of the wind and waves.

That on May 4, 1871, the persons in charge of and engaged in excavating such canal were at work with a dredge, and a force of hands and carts, in removing from the end of the canal the obstructions introduced therein by the storm hereinbefore mentioned; and that they were so engaged with men on Sunday, May 7, 1871.

Deponent further says that he has been informed and verily believes that it is the intention of the defendants to press forward such excavation with extraordinary vigor, pending the delay which must necessarily elapse before the motion for a provisional injunction can be heard, and to so far progress with the same that by the time this motion can be heard, or by the time to which the same may be postponed, the injury and results apprehended from such excavation will be much more nearly impossible than they now are.

PETER E. BRADSHAW.

Subscribed and sworn to this May 10, 1871, before me.

WM. A. SPENCER,
United States Commissioner, &c.

UNITED STATES OF AMERICA, *District of Minnesota, ss:*

The President of the United States of America to the city of Du Luth and W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W. Wheeler, greeting:

You are hereby commanded to appear before our judges of our circuit court of the United States of America for the district of Minnesota, at Saint Paul, in said district, on the first Monday in the month of June next, to answer the bill of complaint of the United States of America this day filed in the clerk's office of said court, in said Saint Paul, then and there to receive and abide by such judgment and decree as shall then or thereafter be made, upon pain of judgment being pronounced against you by default.

To the marshal of the district of Minnesota to execute.

Witness the Hon. Salmon P. Chase, Chief Justice of the Supreme Court of the United States of America, at Saint Paul aforesaid, this 2d day of May, in the year of our Lord one thousand eight hundred and seventy-one, and of our Independence the ninety-fifth year.

[SEAL OF COURT.] H. E. MANN,
Clerk.

C. K. DAVIS,
United States District Attorney.

Memorandum.

The within-named defendants are notified that unless they enter their appearance in the clerk's office of said court, at Saint Paul aforesaid, on

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or before the day to which this writ is returnable, the complaint will be taken against them as confessed, and a decree entered accordingly.

[SEAL OF COURT.] H. E. MANN,
Clerk.

C. K. DAVIS,
United States District Attorney.

(Indorsed:) Circuit court of the United States, district of Minnesota. United States of America *vs.* The City of Du Luth *et al.* Chancery subpœna; returnable first Monday in June, A. D. 1871; filed May 6, A. D. 1871. H. E. Mann, clerk; C. K. Davis, United States district attorney.

DISTRICT OF MINNESOTA, *ss:*

I hereby certify that I served the subpœna in chancery hereto attached, together with the bill of complaint and affidavits on file in the clerk's office, on the city of Du Luth by handing to, and leaving with, Clinton Markell, mayor of said city, W. Van Brunt, city clerk, J. J. Egan, city attorney, and J. B. Ray, vice-president of city council, personally, to each a true copy thereof, at Du Luth, in said district, May 4, 1871; and served the same on Richard G. Coburn, personally, by handing to and leaving with him a true copy thereof, at Du Luth, in said district, May 4, 1871; and served the same on H. W. Wheeler, personally, by handing to and leaving with him a true copy thereof at Oneota, in said district, May 4, 1871; and I do further certify that I served the annexed subpœna in chancery on the within-named W. W. Spaulding, by handing to and leaving with his wife for him a true copy thereof at his usual place of abode, to wit, at Du Luth, in said district, May 5, 1871; and I do further certify that I have made diligent search and inquiry for the within-named W. W. Williams and E. F. Williams, and cannot find them in this district.

AUG. ARMSTRONG,
United States Marshal,
By J. R. CLEVELAND,
Deputy.

Fees: Service of subpœna on seven persons, $14; service of complaint and affidavits, $24; railroad fare to Du Luth and return, $15.40; team to Oneota, $4; expenses, 3d and 4th May, $3.75 a day, $7.50.

United States circuit court, district of Minnesota.

Common rule book.

THE UNITED STATES OF AMERICA }
vs.
THE CITY OF DU LUTH ET AL. }

And now come the defendants, by J. J. Egan, their solicitor, on whose motion it is ordered that the appearance of the defendants be, and the same is hereby, entered.

June 2, 1871.

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Circuit court of the United States, district of Minnesota.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH AND W. W. WILLIAMS, E. D. Williams, Richard G. Coburn, and H. W. Wheeler, partners under the name of W. W. Williams & Co. } In equity.

The above-named defendants hereby appear in the above-entitled suit by the undersigned, their solicitor, and direct the clerk to enter their appearance in the order-book.
June 2, 1871.

J. J. EGAN,
Solicitor for Defendants.

(Indorsed:) U. S. circuit court, district of Minnesota. In equity. The United States of America *vs.* City of Du Luth. Appearance of defendants; filed June 2, 1871. H. E. Mann, clerk.

United States circuit court, district of Minnesota.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH ET AL.

DISTRICT OF MINNESOTA, *ss:*

Willliam H. Newton, having been duly sworn, deposes and says that he resides at the county of Bergen, in the State of New Jersey; that on the afternoon of the 12th day of May, 1871, he visited the canal being excavated across Minnesota Point, being the same canal concerning which the above-entitled action is pending, and found that a northeasterly gale, which had just before prevailed, had washed and made a bar across the lake end of the said canal; that the persons who are excavating said canal were then engaged with men, teams, and a steam-dredge, in removing said bar; that on the morning of the 13th day of May, 1871, deponent again visited said canal and found the same force at work thereon as aforesaid; that they were then nearly, within two or three feet, through the said bar.

That on the morning of May 12, 1871, deponent was at said canal and found the same open, and water running from the bay into the lake with a current of about six miles per hour; that, judging from the depth to which the dredging-dipper sunk, deponent judges that the said canal was then about seven feet in depth; that where the water empted into the lake from the bay the canal was from twenty-eight to thirty feet wide, and that the bar above mentioned was caused by a wind that came up afterward and on the same day.

Deponent further states that he was informed by one of the workmen employed in hauling off dirt from the excavation of said canal, when deponent visited the canal on the morning of May 12, 1871, that they had been employed all the night before on said work.

W. H. NEWTON.

Subscribed and sworn to before me May 16, 1871.
[SEAL OF COURT.] H. E. MANN, *Clerk.*

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STATE OF WISCONSIN, *County of Douglas, ss:*

William H. Newton, being duly sworn, deposes and says that he is a civil engineer by profession, and has been in the active exercise of that profession, or has been engaged in its study, or in observations connected therewith much of the time for the last twenty years; that he has been conversant with the rivers, bays, and waters at the head of Lake Superior since the year 1853; that he is intimately acquainted with the strip of land lying between the bay of Superior and Lake Superior called and known as Minnesota Point; that this deponent on the 29th day of April, 1871, assisted in taking by instrumental measurement the difference between the level of the water in the bay of Superior and the level of the water in Lake Superior; that on that day said measurement established said difference to be more than twelve inches at Du Luth; that on the 30th day of April deponent saw the water running through an excavation, called the Du Luth Canal, from said bay into the lake at the rate, as deponent verily believes, of not less than six miles per hour, and that the breadth of the stream so running was about forty feet.

And this deponent further says that on the 12th day of May, deponent saw the aforesaid canal, and the current from bay to the lake was at that time running at the rate of not less than six miles per hour, as this deponent verily believes; that afterward a bar was formed across and into the canal, composed of sand and gravel driven in from the lake, which bar or bank arrested the flow of the water.

And this deponent further says that on the 17th of May, instant, he observed said canal and found that the work of dredging had been and was being carried on therein, and that only a few feet in width of said bank remained, the rest having been excavated by the dredge of W. W. Williams & Co., the reputed owners thereof; that at the same time men are at work making and preparing to sink wooden cribs in said canal for the purpose of supporting the sides of the cut or excavation, and to render the same permanent, and that deponent was informed that the plan of the canal projector was to carry as fast as possible the line of cribbing out into the lake so as to secure an abiding and continued opening through Minnesota Point, as aforesaid.

W. H. NEWTON.

Subscribed and sworn to before me this 18th day of May, 1871.

HIRAM HAYES,

United States Commissioner for Western District of Wisconsin.

STATE OF WISCONSIN, *County of Douglas, ss:*

George R. Stuntz, being duly sworn, says that he is a civil engineer by profession; that he is conversant with the work of excavation now being carried on at Du Luth through Minnesota Point, called the Du Luth Canal; that he was present observing said work on Wednesday, the 17th day of May instant, and men were engaged in dredging on the canal and in framing and building cribs, preparatory to sinking the same into such excavation in order to wall up the side thereof. That deponent observed a bank of sand and gravel thrown up by the lake across the said canal or cut, and checking the flow of the water at the time, but the dredging was being carried on into the bank, and that there was remaining at the time above stated a width of said bank of say 15 or 20 feet between the waters of the Bay of Superior and Lake Superior.

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That deponent was informed at Du Luth, and verily believes the information, that it is the intention of the canal proprietors, as far as possible, to carry the cribbing continuously on the proposed line of said canal into the lake, so as to make a complete and permanent protection to said cut or excavation.

GEORGE R. STUNTZ.

Subscribed and sworn to before me this 19th day of May, 1871.

HIRAM HAYES,
United States Commissioner for the Western District of Wisconsin.

In the circuit court of the United States for the district of Minnesota.

Order for injunction.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH, W. W. WILLIAMS, E. F. Williams, Richard G. Coburn, and H. W. Wheeler. } In equity.

Before the honorable Samuel F. Miller, associate justice of the Supreme Court of the United States, and one of the judges of said circuit court.

Whereas on the 24th day of May, A. D. 1871, at 10 o'clock a. m., at the place of holding the United States courts in the city of Topeka, Kansas, the United States of America, by C. K. Davis, its attorney for the district of Minnesota, exhibited before me, Samuel F. Miller, one of the judges aforesaid, its bill of complaint in equity, which was filed in the said circuit court for the said district on the 2d day of May, A. D. 1871, against the said city of Du Luth, and the said W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W. Wheeler, setting forth, among other things, that the said defendants were about to excavate, and were engaged in excavating, a canal from Superior Bay, so called, to Lake Superior, across the strip of land called Minnesota Point, by means whereof the works constructed by the plaintiff at the mouth of the Saint Louis River, the entrance to the harbor or bay of Superior will be materially injured, and have applied to me in vacation for a provisional injunction as prayed for in said bill, to enjoin the defendants from digging or excavating said canal or any other canal across said point; and reasonable notice of said application having been given to the said city of Du Luth, and said Richard Coburn, and said H. W. Wheeler to appear before me to resist such application, and the proof and arguments of counsel, as well for the defendants as for the complainants, having been heard, it is considered and adjudged that a provisional injunction, as prayed for in said bill, be, and the same is hereby, allowed. And it is ordered that the writ of injunction of the United States of America be forthwith issued by the clerk of the circuit court of the United States for the district of Minnesota, under the seal of the said court, against the said city of Du Luth, its officers, agents, contractors, and servants, and all persons acting by its instigation, authority, or procurement, or otherwise, and also against the said other defendants, commanding and requiring them and each of them, under the

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penalty of the law, that they do forthwith and absolutely desist and abstain from digging, excavating, or constructing, or causing to be dug, excavated, or constructed the said canal or any canal across the said Minnesota Point, which shall connect the waters of said bay with the waters of said lake, until the further order of the said court.

It is ordered that the marshal of the district of Minnesota do forthwith serve said writ.

May 29, 1871.

SAMUEL F. MILLER, *Judge.*

In the circuit court of the United States for the district of Minnesota.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH, W. W. WILLIAMS, E. F. Williams, Richard G. Coburn, and H. W. Wheeler.

The President of the United States of America to the City of Du Luth W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W Wheeler, greeting:

Whereas on the 24th day of May, A. D. 1871, at 10 o'clock a. m., at the place of holding the United States courts in the city of Topeka, the United States of America, by C. K. Davis, its attorney for the district of Minnesota, exhibited before the Hon. Samuel F. Miller, associate justice of the Supreme Court of the United States of America, and one of the judges of said circuit court, its bill of complaint in equity, which was filed in said circuit court on the 2d day of May, A. D. 1871, against the said city of Du Luth and the said W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W. Wheeler, setting forth among other things that the said defendants were about to excavate and were engaged in excavating a canal from Superior Bay, so called, to Lake Superior, across the strip of land called Minnesota Point, by means whereof the works constructed by the plaintiff at the mouth of the Saint Louis River, the entrance to the harbor or bay of Superior, will be materially injured, and applied to said judge in vacation for a provisional injunction, as prayed in said bill, to enjoin the defendants from digging or excavating said canal, or any other canal, across said point, and reasonable application having been given to said city of Du Luth, and said Richard Coburn, and said H. W. Wheeler to resist such application, and the proof and argument of counsel as well for the defendants as for the complainants having been had before said judge;

And whereas it was by said judge ordered that a provisional injunction, as prayed for in said bill, be allowed; that the writ of injunction of the United States of America be forthwith issued by the clerk of the United States circuit court for the district of Minnesota, under the seal of the said court, against the said city of Du Luth, its officers, agents, and contractors and servants, and all persons acting by its instigation, authority, and procurement, or otherwise, and also against the said other defendants, commanding and enjoining them, and every of them, under the penalty of the law, that they do forthwith and absolutely desist and abstain from digging, excavating, and constructing, or causing to be dug, excavated, or constructed the said canal or any canal

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across the said Minnesota Point, which shall connect the waters of said bay with the waters of said lake, until the further order of the said court:

Now, therefore, you, the said city of Du Luth and your officers, agents, and contractors and servants, and all persons acting by your instigation, authority, and procurement or otherwise, and you, the said W. W. Williams, E. F. Williams, Richard G. Coburn, and H. W. Wheeler, and each and every of you, are hereby enjoined and commanded, under the pains and penalties of the law, to forthwith and absolutely desist and abstain from digging, excavating, and constructing, or causing to be dug, excavated, or constructed, the said canal or any canal across the said Minnesota Point, which shall connect the waters of said bay with the waters of said lake, until the further order of the court.

Witness the Hon. Salmon P. Chase, Chief Justice of the Supreme Court of the United States of America, at Saint Paul, in the district of Minnesota, this ninth day of June, in the year of our Lord one thousand eight hundred and seventy-one, and of our Independence the ninety-fifth year.

[SEAL OF COURT.] H. E. MANN, *Clerk.*

C. K. DAVIS,
United States District Attorney.

(Indorsed:) United States district court, district of Minnesota. The United States of America *vs.* The City of Du Luth *et al.* Writ of injunction. Filed June 16, 1871. H. E. Mann, clerk.

DISTRICT OF MINNESOTA, *ss:*

I hereby certify that I served the within injunction on the within named the city of Du Luth, by serving a true copy thereof on Clinton Markell, mayor of said city, Walter Van Brunt, city clerk, J. D. Ray, vice-president of council, personally at Du Luth, in said district, June 13, 1871, and on J. J. Egan, city attorney, by leaving a true copy with his law partner, W. W. Billson, at the city of Du Luth, in said district, June 13, 1871, and served the same on W. W. Williams and E. F. Williams, by leaving a true copy for each of them with their partner, J. H. Upham, at Du Luth, in said district, June 13, 1871, and I hereby certify that I served the same on R. G. Coburn personally, at Du Luth, in said district, and on H. W. Wheeler, at Oneota, in said district, June 14, 1871.

AUG. ARMSTRONG,
United States Marshal,
By JNO. F. MCLAREN, JR.,
Deputy.

Know all men by these presents, that the city of Du Luth, a municipal corporation created by and existing under the laws of the State of Minnesota, is held and firmly bound unto the United States of America in the penal sum of one hundred thousand dollars, lawful money of the United States, to be paid to the said United States of America, for which payment well and truly to be made the said municipal corporation binds itself and its successors firmly by these presents, sealed with the corporate seal of the said city of Du Luth, dated the 15th day of June, in the year one thousand eight hundred and seventy-one.

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The condition of the above obligation is such that if the said city of Du Luth shall complete or cause a dike across the Bay of Superior from Minnesota Point to Rice's Point, in the State of Minnesota, to be completed in a good and substantial manner on or before the first day of December, one thousand eight hundred and seventy-one, and to be maintained in such condition; and if the said city of Du Luth shall also complete the canal across said Minnesota Point in accordance with the plans specified in the letter from the city attorney of the said city of Du Luth, dated the 6th day of June, A. D. 1871, indorsed by the Chief of Engineers of the War Department, under date of June 7, 1871, to which plans, letter, and indorsement reference is hereby made, at such time as the said city may be able to do so; then the above obligation to be null and void, otherwise to be and remain in full force and virtue.

In testimony whereof the said city of Du Luth, by resolution of its common council, passed on the 15th day of June, A. D. 1871, has caused its corporate seal to be hereunto affixed, and these presents to be executed by its mayor and attested by its clerk.

THE CITY OF DULUTH,
By CLINTON MARKELL, *Mayor.*

Attest:

W. VAN BRUNT, *City Clerk.*

[CORPORATE SEAL.]

[U. S. revenue stamp, one dollar, canceled.]

Sealed and delivered in presence of—
J. D. ENSIGN.
C. C. JONES.

(Indorsed:) United States circuit court, Minnesota. United States *vs.* Du Luth *et al.* Bond. Filed June 17, 1871. H. E. Mann, clerk.

United States circuit court, district of Minnesota.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH ET AL. } In equity.

In pursuance of directions received by me from the Secretary of War in his letter of June 7, 1871, and from the Attorney General, in his letter of June 8, 1871, I hereby consent to a withdrawal of the injunction heretofore issued herein and the staying of further proceedings in the matter.

Dated June 17th, 1871.

C. K. DAVIS,
United States District Attorney, District of Minnesota.

(Indorsed:) United States circuit court, district of Minnesota. The United States *vs.* Du Luth *et al.* Withdrawal of injunction. Filed June 17, 1871. H. E. Mann, clerk.

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United States circuit court for the district of Minnesota. Term minutes, June term, A. D. 1871. June 19, 1871.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH AND OTHERS.

Upon the filing of the bond executed by the defendant, the city of Du Luth, to the said plaintiff, and the written consent of C. K. Davis, esq., the attorney for the plaintiff, consenting to a withdrawal of the injunction heretofore issued in this case, and the staying of further proceedings in the matter, it is ordered that the injunction heretofore issued in this case be dissolved and all proceedings in this case be stayed until the further order of the court herein.

A true record.

Attest:

H. E. MANN, *Clerk.*

United States Circuit Court for the District of Minnesota.

THE UNITED STATES OF AMERICA
vs.
THE CITY OF DU LUTH, ET AL.

DISTRICT OF MINNESOTA, *ss:*

I, H. E. Mann, clerk of said court, do hereby certify that the foregoing is a true copy of the records, pleadings, and proceedings in said court in the above-entitled suit, and of all the files therein, except the map, Exhibit No. 1, attached to the bill of complaint, Profiles "A," referred to in the affidavits of Thomas Clark.

Witness my hand and the seal of said court this 8th day of May, A. D. 1872, at St. Paul, Minnesota.

H. E. MANN.

(Indorsed:) United States circuit court, district of Minnesota. The United States of America *vs.* The City of Du Luth, *et al.* Copy of record and proceedings.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 77.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

SUBMITTING,

In compliance with a resolution of the Senate of March 19, 1872, estimates of appropriations necessary for the next fiscal year to carry out the recommendations of the report of Captain Faunce, and render operative and effective the life-saving stations on the coasts of New Jersey and Long Island.

MAY 15, 1872.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT,
Washington, D. C., May 15, 1872.

SIR: In compliance with the Senate resolution of 19th March last, of the following tenor: "*Resolved*, That the Secretary of the Treasury be requested to inform the Senate what appropriation will be necessary for the next fiscal year to carry out the recommendations of the report of Captain Faunce, and render operative and effective the life-saving stations on the coasts of New Jersey and Long Island," I have the honor to submit the following estimate of the annual expense of conducting the life-saving service in accordance with the captain's recommendations, viz:

LONG ISLAND COAST.

At stations Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 25, 26, 28, 29, and 30, (new numbers:)

Compensation per annum for keeper	$300	
Compensation for crew, seven men, at $180 each	1,260	
Rations for four months for eight men, 968 rations, at 25 cents for ration	242	
Total expense per station	1,802	
Total expense for twenty-six stations		$46,852

At stations Nos. 21, 24, 27, and 31, (no rations required:)

Compensation per annum for keeper	$300	
Compensation for crew, seven men, at $180 each	1,260	
Total expense per station	1,560	
Total expense for four stations		6,240

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Yearly compensation of two superintendents, at $1,500 each	$3,000
Estimate for supplies, &c., thirty stations	5,000
Estimate for fuel, thirty stations	2,000
Total annual expense for Long Island coast	63,092

NEW JERSEY COAST.

At stations Nos. 1, 2, 3, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, and 38:

Compensation per annum for keeper	$300	
Compensation for crew, seven men, at $180 each	1,260	
Rations for four months for eight men, 968 rations, at 25 cents per ration	242	
Total expense per station	1,802	
Total expense for thirty-three stations		$59,466

At stations Nos. 4, 5, 6, 9, 27, 39, and 40, (no rations required:)

Compensation per annum for keeper	$300	
Compensation for crew, seven men, at $180 each	1,260	
Total expense per station	1,560	
Total expense for seven stations		10,920
Yearly compensation of two superintendents, at $1,500 each		3,000
Estimate for supplies, &c., forty stations		5,000
Estimate for fuel, forty stations		2,500
Total annual expense for New Jersey coast		80,886

Total annual expense for Long Island coast	63,092
Total annual expense for New Jersey coast	80,886
Total annual expense for both coasts	143,978

It is belived, however, that the life-saving service may be made operative and effective upon the coasts named, during the next fiscal year, with the appropriation of the amount estimated for by the Department, and contained in the "bill for sundry civil expenses," &c., as reported to the House of Representatives on the 9th instant.

I am, very respectfully,

GEO. S. BOUTWELL,
Secretary.

Hon. SCHUYLER COLFAX,
President of the United States Senate.

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42D CONGRESS, 2d Session. } SENATE. { Ex. DOC. No. 78.

LETTER

OF THE

ACTING SECRETARY OF THE INTERIOR,

COMMUNICATING,

In compliance with a resolution of the Senate of May 9, 1872, information in regard to certain railroad companies.

MAY 16, 1872.—Ordered to lie on the table and be printed.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., May 15, 1872.

SIR: I have received Senate resolution of the 9th instant, directing the Secretary of the Treasury to transmit to the Senate a statement, embracing five particulars, in regard to the following railroad companies: Central Pacific, Western Pacific, Union Pacific, Kansas Pacific, Central Branch Union Pacific, and Sioux City and Pacific. The sixth head directs the Secretary of the Interior to comply with the resolution so far as relates to information, if any, exclusively in his possession.

In answer I have the honor to state that the information in possession of this Department relates only to the fifth head of the resolution, which reads as follows:

> The amount and nature of bonds or other obligations issued by each company, or of obligations created by operation of law and constituting a mortgage or lien on its road or other property, prior to the claim or lien of the United States, during the two periods, one ending with the completion of the road and the other ending with the date of the report made in pursuance of this resolution.

The information in possession of this Department is derived from the sworn statements of the presidents of the railroad companies, in the annual reports which the law requires to be filed in this Department. As these reports are brought up only to the 30th June last, it is not in my power to furnish any information later than that date.

The statement which follows embraces only the first mortgage bonds issued by the companies, as these only are understood to constitute a lien prior to that of the United States.

The Central and Western Pacific Companies having been consolidated, the figures show the amount issued by both these companies.

The first column of figures shows the amount of such bonds issued by each company at the date of the close of the fiscal year in which the last section of their road was accepted by the President.

The second column shows the same at the close of the last fiscal year, June 30, 1871.

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Central and Western Pacific	1870—	$34, 923, 000	$27, 855, 00
Union Pacific	1870—	27, 237, 000	26, 871, 00
Kansas Pacific	1869—	6, 303, 000	6, 303, 00
Central Branch Union Pacific	1868—	(*)	1, 600, 00
Sioux City and Pacific	1869—	1, 628, 000	1, 628, 00

(*) Amount not given.

Very respectfully,

B. R. COWEN,
Acting Secretary.

Hon. SCHUYLER COLFAX,
Vice President and President of the Senate.

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LETTER

FROM

THE SECRETARY OF WAR,

COMMUNICATING,

In obedience to law, the report of the inspector of the national cemeteries for the years 1870 *and* 1871.

MAY 2, 1872.—Referred to the Committee on Printing.

MAY 17, 1872.—Reported and ordered to be printed.

WAR DEPARTMENT, *May* 1, 1872.

The Secretary of War has the honor to submit to the United States Senate, in obedience to the requirements of the act of Congress of February 22, 1867, the accompanying report of the inspector of the national cemeteries for the years 1870 and 1871.

WM. W. BELKNAP,
Secretary of War.

WAR DEPARTMENT,
Washington City, April 20, 1872.

SIR: I have the honor to submit herewith a report, in duplicate, of the inspections made by me, in compliance with Special Orders No. 75, (par. 4) Adjutant General's Office, 1870, and Special Orders No. 20 (par. 1) Adjutant General's Office, 1871, of the national and other cemeteries containing the "Union dead."

This report has been delayed by other duties, but special reports were made at the times of the various inspections whenever, in my opinion there were matters requiring immediate attention.

I am sir, very respectfully, your obedient servant,

OSCAR A. MACK,
Major and Brevet Colonel, U. S. A.

Hon. W. W. BELKNAP,
Secretary of War.

MAINE.

EASTPORT.

Inspected July 20, 1870.

In the cemetery at Eastport there is a small lot belonging to the United States, in which soldiers (regulars) who die at Fort Sullivan,

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near by, are buried. Seven have been buried in it. Three marble slabs have been erected by friends to mark four of the graves; the other three have no mark.

The lot is in pretty fair condition. In this cemetery there is quite a handsome marble monument, erected in memory of Captain Thomas Paul Roach, three sergeants, two corporals, and twelve privates, all of Company K, Sixth Maine Volunteer Infantry, whose names are inscribed upon the faces of the monument, as well as the names of the actions in which they served.

The monument was erected by the surviving members of the company.

Two other soldiers (one an officer) killed during the rebellion are buried here and have marble head-stones.

Lieutenant Chadbourne, of the Regular Army, who was killed at Resaca de la Palma, is also buried in this cemetery, and has a handsome monument.

CALAIS CEMETERY.

Inspected August 23, 1870.

This cemetery is about two miles northwest from steamboat wharf.

It contains the graves or memorials of twenty-four Union soldiers.

Most of these have marble slabs or monuments erected by friends, and over each grave was a small flag, with name printed on it, placed there on Decoration Day.

These graves are not together, but with the families of the deceased, generally.

The monument to Major Joel A. Haycock, Sixth Maine, killed at Fredericksburgh, Virginia, is quite handsome.

WINTHROP-STREET CEMETERY, AUGUSTA.

Inspected August 24, 1870.

In the open ground, beyond the summit of the hill and woods, in this cemetery, is a small, rectangular lot, 33 by 81 feet, in which are the graves of fifty-nine Union soldiers.

One is marked by a marble slab, and six have head-boards, in bad condition. Pegs are placed at some of the other graves, but have no number visible to the naked eye.

About twenty of the graves are leveled, but not sodded; the rest are mounded up and poorly turfed.

The lot is sadly neglected, and but for the very minute flags lying on the graves might well be supposed to be forgotten.

It has never been subject to the control of the United States, nor were the burials made by the General Government.

Five other deceased soldiers are buried in this cemetery, with their friends, their graves being marked by little flags.

FOREST CITY CEMETERY, ON CAPE ELIZABETH, PORTLAND.

Inspected August 19, 1870.

There is a rectangular lot in this cemetery, 90 by 54 feet, set apart for the burial of soldiers, and in it twenty-four are buried, all known.

All the graves except one are in a plat 54 by 21 feet, and are arranged in two parallel rows, but neither row is filled. This plat is raised about

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three feet above the general surface of the ground, (which is almost a dead level,) and is grassed over; but the turf is very poor, as there is no soil—nothing but sand.

Three marble slabs have been erected by friends; pegs are placed at the other graves. They have, however, no numbers on them, but the superintendent knows the position of each grave.

Trees and shrubbery are needed here, as well as head-stones.

The following interments are officially reported in other parts of the State, viz:

	Known.	Unknown.
Union soldiers	20	10

Recapitulation for the State of Maine.

	Officers.	Enlisted men.	
		Known.	Unknown.
Eastport	2	22	3
Calais	2	22	
Augusta, Winthrop-street cemetery		42	22
Portland, Forest City cemetery		24	
Other places in the State		20	10
Total	4	130	35

NEW HAMPSHIRE.

"OLD CEMETERY," CONCORD.

Inspected August 29, 1870.

No soldiers' graves found. Ten are reported to be in the cemetery. Called at the office of the adjutant general of the State for information, but it was closed.

This cemetery is much neglected, and but little used.

It is understood that all the soldiers buried there are unknown. They certainly lie unmolested; and their graves, though unknown, are scarcely more neglected than most of the others in that cemetery.

There is a handsome monument erected to Captain S. J. Alexander, Ninth New Hampshire.

VALLEY CEMETERY, MANCHESTER.

Inspected August 30, 1870.

There is no soldiers' lot in this cemetery; but there are fifty-nine Union soldiers buried here with their friends; some of them having handsome monuments or marble slabs, and all having small flags on them—placed there on Decoration Day.

This cemetery is a very pretty one.

PINE GROVE CEMETERY, MANCHESTER.

Inspected August 30, 1870.

There are nine Union soldiers buried in the "Potters' Field"—pauper lot. Four have head-boards, in bad condition, with names painted on them; the other five have only the flag to designate them. There are also nine other Union soldiers buried in this cemetery with their friends.

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PROPRIETORS' CEMETERY, PORTSMOUTH.

Inspected August 19, 1870.

There is no soldiers' lot in this cemetery, but there are fifty-five Union soldiers buried here with their friends. Their graves are all marked with small flags, and most of them with marble slabs or monuments.

"OLD CEMETERY," NEAR EASTERN RAILWAY STATION.

Inspected August 19, 1870.

No soldiers lot. Seven soldiers buried here among their friends.

Recapitulation for New Hampshire.

	Known.	Unknown.	Total
Concord, Old Cemetery	1	10	11
Manchester, Valley Cemetery	59		59
Manchester, Pine Grove Cemetery	18		18
Portsmouth, Proprietors' Cemetery	55		55
Portsmouth, Old Cemetery	7		7
Officially reported as buried in other places in the State	12		12
Total	152	10	162

No expenditures by the United States during past year.

VERMONT.

PROSPECT HILL CEMETERY, BRATTLEBOROUGH.

Inspected August 31, 1871.

There is a soldiers' lot in this cemetery, purchased by the United States, situated in the southwestern portion of the grounds, near the high bluff overlooking the Connecticut River.

The lot is rectangular, about 50 by 30 feet, is inclosed by a hemlock-spruce hedge, having a balsam-spruce at each corner. Hedge and trees are in good condition.

There is a graveled walk around the hedge and on three sides, within. The graves (eighteen) are all leveled and well turfed, and are marked by thick, chestnut head-boards, well painted and lettered.

The expenditures, up to the 14th of September, 1868, amount to $220.

Recapitulation for Vermont.

Prospect Hill Cemetery, Brattleborough	18
*Other places	6
Total	24

*Officially reported as buried in other places.

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MASSACHUSETTS.

GARDEN CEMETERY, CHELSEA.

Inspected August 11, 1870.

The citizens of Chelsea have secured a conspicuous lot in this cemetery, near the main entrance, in which they have buried nineteen of their sons—Union soldiers.

The plat containing these graves is elliptical in form, 48 by 28 feet, inclosed by a dressed granite curbing, 18 inches high, 10 inches thick; round on top. In the center is quite a handsome monument, with granite base and marble superstructure. A graveled walk extends around the monument and along transverse axes to stone steps, and balustrade at each end. Each grave has a handsome marble block at its head; no two alike, all small, neat and substantial, resting on granite foundations. Nearly every grave is planted with flowers.

All the arrangements are simple and pleasing; they show cultivated taste and care, as well as affectionate remembrance.

The whole cost was three thousand dollars. The cemetery association takes care of the lot.

There are seventeen other Union soldiers buried in this cemetery with their friends; their graves being readily recognized by the little Union flags placed upon them on Decoration Day. No expense to the United States.

CAMBRIDGE CEMETERY.

Inspected August 11, 1870.

This cemetery is separated from Mount Auburn Cemetery by an avenue. The soldiers' lot is circular, 50 feet in diameter. The circumference is divided into equal arcs by eight very fine arbor vitæs, and in the center of the plat is a large, vigorous larch. In five of the spaces, between the arbor vitæs, are the graves of the Union soldiers; in five spaces, four graves each; in one, three; making twenty-three in all.

Handsome marble slabs, five inches thick, of uniform pattern, are placed at the head of all the graves, except the three last named, and to two of those the foundations have been laid.

The graves of twenty other Union soldiers are in this cemetery, with their families. No expense to the United States.

In a public park near Harvard University a large granite monument has been erected by the city of Cambridge, in memory of her sons who "died in the service of their country in the war for the maintenance of the Union," and their names (357) are inscribed upon it. This monument has just been dedicated with appropriate ceremonies. The grounds about it are not quite completed. The whole cost will be about thirty thousand dollars.

VILLAGE CEMETERY, DEDHAM.

Inspected August 12, 1870.

The soldiers' lot is in the southwest corner of this cemetery. The plat for the graves has been terraced, and the whole sixty-five graves placed in one row. The graves are leveled and well turfed.

A granite monument stands upon the terrace; a marble slab is placed on each of the four faces of the shaft, and on these slabs are inscribed the names of the deceased soldiers.

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On one face of the plinth is a marble slab with this inscription: "Erected by the State of Massachusetts in memory of the soldiers who died at Readsville during the war, 1861–1865." The State owns the land.

The Rural Cemetery in Worcester contains the graves of forty-five Union soldiers, buried with their families or friends; but there is no soldiers' lot in it, and the Government has expended no money there.

The Hope Cemetery, in "New" Worcester, contains the graves of thirty-eight Union soldiers, also buried with their friends; but it contains no soldiers' lot. No expenditure by the United States.

Recapitulation for the State of Massachusetts.

	White, known.	Colored, known.	Total
Garden Cemetery, Chelsea	36	.....	3
Cambridge Cemetery	43	.....	4
Dedham Village Cemetery	25	40	6
Rural Cemetery, Worcester	45	.....	4
Hope Cemetery, Worcester	38	.....	3
Other places*	44	.....	4
Total	231	40	27

* Officially reported as buried in other places.

CONNECTICUT.

EVERGREEN CEMETERY, NEW HAVEN.

Inspected September 1, 1870.

The soldiers' lot in this cemetery is owned by the State. It is a rectangle 48 by 63 feet, and is inclosed by an iron fence, 3 feet high, resting on granite posts, rising 6 inches above the ground.

The lot contains the remains of one hundred and seventeen Union soldiers who died in the general hospital in New Haven.

The graves are all leveled, and the plat well sodded.

The State has appropriated five thousand dollars for the erection of a monument in the center of this plat.

Seventy other Union soldiers are buried with their families in this cemetery.

ROMAN CATHOLIC CEMETERY, (SAINT BERNARD'S,) NEW HAVEN.

Inspected September 1, 1870.

A small lot, about 10 by 12 feet, in this cemetery belongs to the United States, and contain the remains of eight Union soldiers.

The graves are sodded, but are not marked or inclosed.

Twenty-five other Union soldiers are buried in this cemetery with their friends.

Recapitulation for Connecticut.

Evergreen Cemetery, New Haven	187
Saint Bernard's, Roman Catholic, Cemetery	33
Total	220

No expenditure by the United States during the past year.

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RHODE ISLAND.

There are no burials of soldiers reported in Rhode Island, except at Fort Adams.

But there is scarcely a grave-yard in New England, and throughout the North, that does not contain the graves of Union soldiers.

NEW YORK.

CYPRESS HILL NATIONAL CEMETERY.

Inspected September 2, 1870.

This cemetery is situated within the cemetery of that name, about five miles east of Brooklyn, Long Island.

The Government lot is situated in the northwestern portion of the grounds, near the upper entrance, with Cypress avenue passing through it, dividing the lot into two nearly equal parts, and contains about two acres of land, including the avenue. It is bounded on the northwest by a sunken road, which sweeps by with a gentle curve, and separates it from the Jewish cemetery. The ground slopes sharply to the northeast to a deep ravine, forming its boundary on that side. The lot is not separated from the main cemetery, but it is proposed to plant a hedge around it this fall.

The graves are arranged in concentric rows (curving with the road above mentioned) on each side of Cypress avenue, and all are mounded up and sodded, and kept neatly trimmed; they number three thousand one hundred and seventy of Union soldiers, and four hundred and sixty-one of rebel prisoners of war, classified as follows, viz:

	Known.	Unknown.
Commissioned officers	4	--
White Union soldiers	2,887	69
Colored Union soldiers	199	3
Employés and citizens	....	8
Total	3,090	80

The burials were made from the general hospitals near New York; and bodies were removed from Hart's and David's Islands, in Long Island Sound, and from the soldiers' burial-ground near Providence, Rhode Island.

Most of the graves are marked by having a small marble slab placed at the first grave in each row, with the numbers cut on it, indicating the number of graves in that row, as 1 to 65; 66 to 130; and so on.

About three hundred bodies were removed from Providence hospital, Rhode Island, and the original head-boards have been placed at the graves; they are in very poor condition.

The lodge is a wooden cottage containing two good-sized rooms and a kitchen; it is in good order, and is beautifully located, overlooking Jamaica Bay and Rockaway Beach.

A cistern has been put in, and usually the supply of water is sufficient.

Near the lodge is a small circular mound, upon which is a fine flag-staff, and around it are four iron guns (24-pounders) planted vertically as monuments.

On Decoration Day a good many flowering shrubs were planted upon the graves, but they have not done well and were entirely misplaced.

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There are some handsome flower-beds and shrubbery about the lodge and flag-staff mound.

The grounds are kept in very good order.

The superintendent is a one-armed man, and has an assistant the year round, who is paid fifty dollars per month.

The expenditures up to June 30, 1871, amounted to $21,262.50.

ALBANY RURAL CEMETERY.

Inspected April 7, 1870.

The soldiers' lot is in a very conspicuous part of the cemetery, on an elevated plateau, overlooking the Hudson River, and commanding beautiful and extensive views.

The lot is nearly semi-elliptical in form, having transverse axis for chord, and western boundary; this line is about one hundred feet long; the semi-longitudinal axis is about the same length.

One of the principal drives sweeps around the curve, and a graveled walk extends across the base.

The graves, one hundred and twenty-eight in number, are arranged in rows near to and parallel with the walk, and are all very well sodded. Several of the graves are marked by marble slabs erected by friends; these have been thrown out of position by the frost; the other graves have no marks. The superintendent has the record of the burials, and knows the order in which they were made.

The interments were mostly made from the military hospitals near Albany, although a few bodies were brought from the South. They are all of known Union soldiers and sailors.

Between the graves and the apex of the curve is a vacant space in which the Grand Army of the Republic is about to erect a handsome granite monument, to be surmounted by a statue of President Lincoln. When this is completed the soldiers' lot will be the most attractive spot in this handsome cemetery.

The expenditures last year were twenty-five dollars; for this year they will be fifty dollars, to be paid to the Cemetery Association for keeping grounds in good order.

WOODLAWN CEMETERY, ELMIRA.

Inspected September 13, 1870.

In the northeast corner of this cemetery there is a large lot of about two acres, containing the graves of two thousand nine hundred and sixty-eight rebel prisoners of war. The remains of twenty have been removed by friends.

The graves are in parallel rows, mounded up and sodded. Head-boards, painted and lettered, were placed to all the graves, but many have rotted off and fallen down.

The lot is overgrown with Canada thistles and rank weeds.

A short distance west from this lot is another lot, containing the graves of one hundred and twenty-eight Union soldiers, all known, buried in two parallel rows. These bodies have been removed from original place of burial, and are not here placed in consecutive order of numbers. The head-boards are in good order. Grass and weeds are growing rank over this lot also.

Owing to some difficulty in regard to his pay, the keeper of this cemetery has not taken care of these two lots since June 1, 1870.

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A special report has been made in this case.
The expenditures up to 31st October, 1867, amount to $2,000.

MOUNT HOPE CEMETERY, ROCHESTER.

Inspected September 17, 1870.

There are said to be one hundred and fifty Union soldiers buried in this cemetery, nearly all being buried with their families.
But there are ten soldiers' graves in the Potter's field.
The superintendent has a record of these burials; but the graves are without head-boards or other distinguishing marks.

No expenditures by the United States.

FOREST LAWN CEMETERY, BUFFALO.

Inspected September 18, 1870.

There is no soldiers' lot in this cemetery; but twenty-six Union soldiers are reported to be buried in it, probably with their friends.
No expenditures by the United States.

LIMESTONE HILL CEMETERY, BUFFALO.

Inspected September 19, 1870.

Ten Union soldiers are reported to be buried in this cemetery; probably buried with their friends. No soldiers' lot discovered.
No expenditures by the United States.

Recapitulation for the State of New York.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total.	Citizens.	Rebel prisoners of war
Cypress Hill National Cemetery, near Brooklyn, Long Island.	2,891	69	199	3	3,162	8	461
Rural Cemetery, Albany	128	.....	.....	.....	128	.....	.....
Woodlawn Cemetery, Elmira	128	.....	.....	.....	128	.....	2,968
Mount Hope Cemetery, Rochester	150	.....	.....	.....	150	.....	.....
Forest Lawn Cemetery, Buffalo	26	.....	.....	.....	26	.....	.....
Limestone Hill Cemetery, Buffalo	10	.....	.....	.....	10	.....	.....
Officially reported as buried at other places in the State, excluding military posts.	105	.....	.....	.....	105	.....	.....
Total	3,438	69	199	3	3,709	8	3,429

NEW JERSEY.

FAIRMOUNT CEMETERY, NEWARK.

Inspected October 22, 1870.

In this cemetery there is a soldiers' lot, having an irregular outline, but about 150 feet long, and average about 60 feet in width. It is situated along one of the principal avenues of the cemetery, and is

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quite conspicuous. In the center is a handsome granite monument 8' square at base, 30 feet high, surmounted by a life-size statue of a soldier standing sentinel over his dead comrades.

This monument was erected by the city of Newark, in 1869. An oval grass plat surrounds its base, and four bronze cannon are planted vertically near the corners. A graveled path extends from the entrance, in center of south end, (where two bronze cannon are also planted, one on each side,) through center of lot, passing around the monument to the north side, where there is a small flag-staff. A number of trees—maple and arbor vitæs—are planted along the border and are growing well.

There are one hundred and sixty-four Union soldiers buried in this lot. The graves are all leveled and well sodded and neatly trimmed.

Fifty-one of the graves have marble head-stones, all alike, 4 inches thick, 16 inches wide, 20 inches high, and standing on red-sandstone blocks. The name, company, and regiment are cut in the head-stone. Head-boards, painted and lettered, are placed at the remainder of the graves, except two. All are known.

The lot is taken care of by the Cemetery Association, without any expense to the United States, and is kept in excellent order.

BEVERLY CEMETERY.

Inspected October 23, 1871.

In the northwest corner of the village cemetery is the soldiers' lot. It is an irregular figure of four sides, and contains one acre. It is inclosed by a slight wooden picket-fence, painted black. It fronts north on the Bridgeborough road, and the entrance is in the center of that side, from which a path extends through the lot, and at its southern extremity is a small flag-staff.

One hundred and forty-seven Union soldiers, who died in the general hospital at Beverly, are buried in this cemetery. All known except ten. Twenty-three in one row, on right of and parallel to path from entrance. The balance are on left of said path in eight rows, parallel with front. These graves are all mounded up and sodded, and the grass neatly trimmed. There are head-boards to all the graves, painted and lettered; some have rotted off and fallen down.

There are many trees growing well in this cemetery, evergreen (*Coniferæ*) and deciduous, and in a few years will present a fine appearance.

A trench for an Osage orange hedge had been dug, and the plants were soon to be put in. The superintendent of the Philadelphia cemeteries has charge of whatever work is done here.

Expenditures, as reported, $1,970.

Recapitulation for the State of New Jersey.

	Known.	Unknown.	Rebel prisoners of war.
Beverly Cemetery	137	10	.....
Fairmount Cemetery, Newark	164	.....	.....
Finn's Point, opposite Fort Delaware	10	.....	1,434
Sandy Hook	5	2	.....
Total	316	12	1,434
Total Union soldiers, known and unknown			328

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DELAWARE.

On Pea-Patch Island, belonging to the United States, there are buried two Union soldiers and one hundred and forty rebel prisoners of war.

In the incorporated cemeteries, in the vicinity of Wilmington, Union soldiers are buried as follows, viz:

	Known.	Unknown.
White Union soldiers	69	12
Colored Union soldiers	3	1
Total	72	13

Expenditure by the United States, $32.

Recapitulation for the State of Delaware.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Rebel prisoners of war.
Pea-Patch Island	2				2	140
Wilmington cemeteries	69	12	3	1	85	
Total	71	12	3	1	87	140

PENNSYLVANIA.

PHILADELPHIA.

The Union soldiers who died in the general hospitals in Philadelphia were buried in seven different cemeteries, one or more plats in each being devoted to this purpose, and either donated to or purchased by the Government. These different lots, taken together, are regarded as a national cemetery, and a regularly appointed superintendent has charge of them, under the directon of the district quartermaster.

GLENWOOD CEMETERY—GERMAN.

Inspected October 18, 1870.

Is situated at the corner of Ridge avenue and Islington lane, three and one-half miles from city hall.

It is inclosed by a substantial iron fence, and contains some fine trees and shrubbery.

There are two "soldiers' lots," one in the southeast corner, nearly a rectangle of 25 feet by 190, feet containing 179 graves, arranged in rows parallel with the short side. A graveled walk surrounds this lot, with a cross-walk dividing it into two parts.

About 150 yards north of this is the other soldiers' lot, which is also nearly a rectangle, 234 feet by 57 feet, and contains 523 graves, arranged in rows parallel with the long sides. One row is close to the eastern fence of the cemetery—the graves perpendicular to it—and is separated from the other rows by a graveled walk. A similar walk surrounds the rest of the lot. In both of these lots the graves are all mounded up and well sodded, and the grass neatly trimmed.

Thick black-walnut head-boards are at all the graves; they have never been painted, and are much weather-beaten; the names of the

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deceased soldiers were marked upon them once, but are now scarcely legible; can be deciphered only with great difficulty.

The head-boards will last several years yet; they should at least be numbered, if not painted and lettered; small Union flags, attached to little sticks, were waving over the graves; they had been planted on Decoration Day.

Nine rebel soldiers, prisoners of war, are buried here among the Union dead.

Expenditures up to the 31st of August, 1871, amount to $4,594.50.

ODD FELLOWS' CEMETERY, PHILADELPHIA.

Inspected October 18, 1870.

Is situated at the corner of Islington lane and Twenty-fourth street, and is only a short distance east of Glenwood Cemetery. It is inclosed on the front by an iron fence, on the other side by a wooden picket fence. It contains some fine old trees, and a few handsome monuments. Just west of the entrance, and between the main drive and the front fence, are the graves of sixty-seven Union soldiers arranged in three rows, parallel with the fence, the graves also being parallel with this front.

On the west side of the cemetery, and close to the fence, is a single row of graves, numbering two hundred and ten, of which fourteen are of rebel prisoners of war, the balance of Union soldiers. The graves are all mounded up and sodded, and the grass neatly trimmed, and are provided with head-boards, painted and lettered.

The expenditures up to 31st of August, 1871, amounted to $1,643.

UNITED AMERICAN MECHANICS' CEMETERY, PHILADELPHIA.

Inspected October 18, 1870.

Adjoins the Odd Fellows' Cemetery on the east; it is inclosed by a good fence, iron and wood; the soldiers' lot is quite small, about 25 feet square; it is said to contain the remains of eleven soldiers, but only six graves were visible; they were marked by head-boards, painted and lettered; the grass was tall and coarse, and probably had not been cut this season; it is understood that the Cemetery Association intends to put this lot in proper order, and keep it so in future.

No expenditures by the United States reported.

MOUNT MORIAH CEMETERY.

Inspected October 19, 1870.

Is situated near the Darby Plank Road, four miles west of city hall. This is a fine, large cemetery, beautifully situated and handsomely improved. There are two soldiers' lots in it. The larger one is an irregular figure of six sides, situated on the slope of a hill overlooking a pretty valley and brook. It contains four hundred and seven graves, six being of rebel prisoners of war, the rest of Union soldiers. The graves are all mounded up, well sodded, and neatly trimmed. A few marble slabs have been erected by friends; head-boards to the balance of the graves, but they are old and rotten and some are fallen down. Paths run between the rows of graves, and are kept clean. Drives bound two sides of this lot. The other soldiers' lot is in the new part of the cemetery, and is known as the "Cooper-Shop Saloon" lot, as it was purchased and fitted up by an association of that name. It is a small

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rectangle, enclosed by an elaborate iron fence, and contains the remains of thirty-one Union soldiers. There are no grave-marks. The lot is well turfed and neatly kept. Adjoining this lot is one belonging to the Volunteer Soldiers' Home, containing the graves of thirty-three Union soldiers who have died since the war.

This lot is surrounded by a railing made of 3-inch galvanized-iron pipe, united by 8-inch shells, (also galvanized,) with burning fuses, the shells resting on marble posts 6 inches square, and rising 15 inches above the ground.

The expenditures on account of interments of soldiers in this cemetery, up to 31st August, 1871, amount to $2,540.

WOODLAND CEMETERY, PHILADELPHIA.

Inspected October 19, 1870.

Is on the Darby road, about one mile west of the Market street bridge, over the Schuylkill.

It is a very attractive cemetery, containing many noble trees, fine drives, and costly monuments.

The soldiers' lot is in the open, unoccupied ground overlooking the river, and is a small rectangle 42 feet by 69 feet. It contains one hundred and sixteen graves of Union soldiers, all mounded up and well sodded, and grass neatly trimmed.

There are head-boards to all the graves, but they are old and poor.

This lot is quite isolated, and, having no trees or shrubbery about it, looks naked. An arbor-vitæ hedge would improve its appearance very much.

Expenditures up to 31st October, 1869, amount to $702.

LEBANON CEMETERY.

Inspected October 19, 1870.

Is situated on the Passyunk road, near Penrose Farm, in Twenty-sixth ward.

It is a small cemetery, used by colored people. The soldiers' lot is nearly a square of 75 feet, and contains the graves of three hundred and thirty-nine colored soldiers, arranged in parallel rows. The graves are all sodded and well trimmed. A stake is placed at each grave with its number painted on it, and every sixth grave has also a head-board, bearing the names of the occupants of the six graves. Their names are faded and difficult to read.

Near by the foundation of a monument has been laid, and $4,000 subscribed for its completion by the colored people of Philadelphia.

The names of the soldiers buried here are to be inscribed on this monument.

The bodies were originally interred in Glenwood and Odd Fellows' Cemeteries, from the general hospitals in Philadelphia, and were removed by the Quartermaster's Department.

The expenditures up to 31st August, 1871, amount to $4,654.25.

LAFAYETTE CEMETERY.

Inspected October 19, 1870.

Occupies a square between Ninth and Tenth and Wharton and Federal streets, and is inclosed by a substantial iron fence.

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The Volunteer Refreshment Association of Philadelphia provided the lot and paid the expenses of the burial of the 24 Union soldiers interred in this cemetery.

In most of the cemeteries in Philadelphia there are the remains of Union soldiers, removed by friends from distant fields, and not included in this report. Their presence is generally indicated by the little Union flags waving over them.

CHESTER RURAL CEMETERY.

Inspected October 20, 1870.

Is situated about one mile north of the railway station. The soldiers' lot is on the north side, near the middle, between the main drive and the fence, and is nearly a trapezoid in form; the parallel sides being 50 and 60 feet respectively, and the distance between them about thirty feet.

The ground slopes gently to the east, affording good drainage. There are 53 graves in this lot, of Union soldiers who died in the general hospital near Chester. The graves are arranged in parallel rows; are mounded up, well-sodded, and grass neatly cut. One handsome marble monument and two marble slabs have been erected by friends. These graves have no marks. The rest have very poor head-boards, old and weather-beaten, neither name nor number visible.

In the northwest corner of the cemetery are the graves of 169 rebel prisoners of war, who were originally buried in Powell's Cemetery and elsewhere. These graves are also mounded up and sodded, and have head-boards.

The expenditures up to July 31, 1868, amount to $1,941.50.

WHITEHALL CEMETERY.

Inspected October 24, 1870.

Is situated on a side-road about two and a half miles from Bristol, and three-fourths of a mile from the village of Whitehall. It is remote from any other cemetery, and was purchased by the Government for the burial-ground of the dead at the general hospital near Whitehall. It is in the form of a rectangle, 184 by 240 feet, and contains one acre, inclosed by a slight wooden picket-fence, painted black some years ago.

The entrance is in the center of the east side, which fronts on the road. The ground is nearly level, and is covered with a good turf. The graves are arranged in two rows, the first about thirty feet from and parallel with the front fence—contains 50 graves—26 on right of entrance, 24 on left, the balance (11) in a parallel row in rear of first, on right of entrance. The graves are all mounded up and sodded, and well trimmed, and have head-boards, painted and lettered, but very dim, old, and weather-beaten. A trench has been prepared this fall for Osage-orange hedge; the plants to be set out soon. A few small trees are growing in the lot; more are needed. A stone fence is also required here.

Expenditures up to June 30, 1871, amount to $1,910.57.

HARRISBURGH CEMETERY.

Inspected October 26, 1870.

This cemetery contains a soldiers' lot on the west side, near the center. It is in the form of a long narrow parallelogram, and the graves are

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arranged in rows parallel with the long sides. They are said to number 155, but as there are only a few grave-marks, and as several bodies have been removed to make room for an avenue which it is designed to open, while the graves remain in appearance very like the others, it is difficult to determine, on the spot, their exact number and position. A few (11) marble slabs have been erected by friends, and a very few poor head-boards are scattered among the graves, with scarcely a name legible. The graves are well covered with turf, and the grass has been neatly cut. A few seedling locusts are in this lot.

These burials were from the dead at Camp Curtin, and among them are the remains of 15 rebel prisoners of war.

Expenditures not known. This lot has not received much attention.

The citizens of Dauphin County are erecting in State street, Harrisburgh, a large monument to the memory of their comrades who fell during the war of the rebellion. It is a square pyramid of dressed limestone, and is now about seventy-five feet high and unfinished.

CEDAR GROVE CEMETERY, CHAMBERSBURGH.

Inspected October 26, 1870.

Is near the town, and, though small, is quite pretty. It contains a small lot devoted to the burial of soldiers who died here soon after the battle of Gettysburgh. It is a rectangle, 12 by 18 feet, and contains 19 graves; five of these have marble slabs erected by friends; the rest have plain head-boards, with neither names nor numbers on them.

There are no records here, and the superintendent has no knowledge of the interments. The grass has not been cut this season.

Expenditures not known.

PROSPECT HILL CEMETERY, YORK.

Inspected October 27, 1870.

Is situated on high, rolling ground, about half a mile northwest of railway station. It is inclosed by a substantial fence, and is laid out and improved with considerable taste. The soldiers' lot is on the western slope of the hill, in the open ground, near the northwest corner of the cemetery.

A drive passes along its western side. The graves are arranged in four slightly curving rows parallel with the drives, and number 153, viz: Forty in first row, 39 in second, 38 in third, and 36 in fourth. The graves are all mounded up and sodded, and the grass well trimmed. A few marble slabs have been erected by friends; head-boards, painted, lettered, and numbered, to balance of graves.

These burials were from the general hospital in York. A few shrubs and young trees are growing in this lot, and seem to be doing well.

Expenditures not known.

SOLDIERS' CEMETERY AT GETTYSBURGH.

Inspected August 23, 1871.

This cemetery is situated just south of the village of Gettysburgh, on the north end and west side of what is known as "Cemetery Hill" in the accounts of the battle of Gettysburgh. It fronts east, on the Balti-

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more turnpike about three hundred feet, and this front is covered by a heavy cast-iron fence.

The main entrance is in this front, near the north end, and is closed by double iron gates over the carriage-way, and two small side-gates supported by large square iron posts, on which are inscribed, in bronzed letters, the names of the States whose dead sleep within. Each post is surmounted by a large bronzed iron eagle. The gate-way, posts, &c., cost about $1,850; the fence, $7.66 per linear foot. On the north side, running across to the Taneytown road, there is a substantial stone wall laid in mortar and covered with a heavy coping of dressed granite, 8 inches thick and 23 inches wide, with the top slightly beveled. This side is 950 feet long.

A similar wall extends along the Taneytown road, nearly south 1,250 feet, then nearly east, across the south end, 300 feet. This wall cost $4.87 per linear foot.

The town, or local cemetery, is on the summit of the hill, and is separated from the soldiers' cemetery by a fence made of wrought-iron pipes (gas-pipes 1¼ inches in diameter) screwed together and passing through cast-iron posts. The fence is 3 feet high, and has two rows of these pipes for rails, about a foot and a half apart. It is 1,726 feet long, viz: From Baltimore pike southwest, 960 feet; then south 766 feet; it cost $2.35 per linear foot. On the inside (*i. e.*, on the north and west) of this fence an arbor vitæ hedge has been planted; it is quite uneven, as many of the plants have died and have been replaced by smaller ones.

The lot contains seventeen acres of land, which slopes very gently to the north, northwest, and west, and commands very extensive views of the surrounding country, which is very beautiful.

On the highest part of the ground, and near the northwest corner of the town cemetery, is placed the very handsome and costly monument erected by the association to the memory of the brave men who died here in defense of the Union, and whose deeds have been rendered immortal by the imperishable words of President Lincoln, in his dedicatory address at the laying of the corner-stone of this monument, on the 4th of July, 1864.

The base of the monument is surrounded by a small circular grass-plat, and is inclosed by a light iron fence. A drive surrounds this circle, and a border of shrubs surrounds the drive, then come the graves, arranged in concentric semi-circles, divided by walks into sectors of different sizes. The semi-circles are separated from each other also by paths, and each semi-circle constitutes a little terrace.

The graves are arranged in a single row in each terrace, and are classified by States as far as known. They are all well sodded, and the grass is kept neatly cut.

The graves are marked by having a continuous granite curbing along the outer edge of each terrace, and opposite each grave the name, regiment, &c., of the occupant have been cut on the upper surface of the curbing. The curbing is laid on a stone foundation extending below frost, and the curb-stones are clamped together on top with iron. The stone for this purpose was obtained near by; the cost of the work was $4 per linear foot, or $12 per grave.

These grave-plats occupy about 2¼ acres, including the monument; the rest of the grounds are devoted to ornamental purposes.

Cast-iron seats of a very neat pattern and iron vases have been placed very freely around and among the grave-plats.

The interments are as follows, viz:

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	Known.	Unknown.	Total.
Maine	87	17	104
New Hampshire	22	27	49
Vermont	43	18	61
Massachusetts	157	2	159
Rhode Island	12	.....	12
Connecticut	22	.....	22
New York	597	270	867
New Jersey	43	35	78
Pennsylvania	357	177	534
Delaware	15	.....	15
Maryland	16	6	22
West Virginia	11	.....	11
Ohio	127	4	131
Indiana	62	18	80
Illinois	5	1	6
Michigan	168	3	171
Wisconsin	53	20	73
Minnesota	32	20	52
United States regulars	102	36	138
Unknown, name or State	.....	979	979
Total	1,931	1,633	3,564

The bodies were removed soon after the battle from the places of original interment in the vicinity of the battle-field, and very great pains were taken to identify them.

From the main entrance a drive, twenty-five feet wide, well graded and graveled, extends southwest along the division line between this and the local cemetery, passing by and around the monument; then turns to the north and descends to near the Taneytown road, and returns below the grave-plats to the place of entrance. At this point of intersection there is a triangular space reserved for a monument to General John F. Reynolds. The base and pedestal for this monument had been laid at the time of this inspection. It is expected that the monument will be completed this year.

The grounds have been very handsomely ornamented with trees and shrubs, selected and grouped by Mr. William Saunders, the eminent landscape gardener, in charge of the public gardens in Washington.

No flag-staff has been erected in the grounds. When the cemetery is transferred to the United States, and it is expected that it will be next season, a flag-staff should be put up; and I would suggest that it be placed near the southeast corner, just above (south of) the Reynolds monument, instead of in the southwest portion, beyond the return curve in the main drive, as designated in the plan of the grounds.

The lodge is in the northeast corner, right at the main entrance. It is a square stone building, having three rooms on ground-floor. A Mansard roof has been put on since it was built, and a piazza, all around, has been added. The architectural effect is not very pleasing, but the building is comfortable and substantial. The out-buildings are judiciously arranged. Water is supplied from a well near the lodge.

No expenditures by the United States Government have been made.

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Recapitulation for the State of Pennsylvania.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Rebel prisoners of war.
Glenwood Cemetery, Philadelphia	682	11	.....	.....	693	.....
Odd Fellows' Cemetery, Philadelphia	245	17	1	.....	263	.....
United American Mechanics' Cemetery, Philadelphia	6	5	.....	.....	11	.....
Mount Moriah Cemetery, near Philadelphia	465	.....	.....	.....	465	.....
Woodland Cemetery, near Philadelphia	110	6	.....	.....	116	.....
Lebanon Cemetery, near Philadelphia	.....	.....	339	.....	339	.....
Lafayette Cemetery, near Philadelphia	8	16	.....	.....	24	.....
Rural Cemetery, Chester	50	3	.....	.....	53	.....
White Hall Cemetery, near Bristol	59	1	.....	1	61	.....
Harrisburgh Cemetery	117	23	.....	.....	140	.....
Cedar Grove Cemetery, Chambersburgh	.....	19	.....	.....	19	.....
Prospect Hill Cemetery, York	151	2	.....	.....	153	.....
Soldiers' Cemetery, Gettysburgh	1,931	1,633	.....	.....	3,564	.....
Other burials in the State officially reported	330	40	.....	.....	370	.....
Total	4,154	1,776	340	1	6,271	.....

MARYLAND.

NATIONAL CEMETERY AT ANNAPOLIS.

Inspected July 13, 1871.

This cemetery is situated about one mile west of the railway-station in Annapolis, and fronts (south) on the West-street road, just outside the city limits.

The lot is an irregular figure of several sides, but may be called nearly a parallelogram, about four times as long as broad, and containing about four acres of undulating land. It is inclosed by a granite wall, laid in mortar, and covered with a coping two inches thick. This wall was only partially built at the time of this inspection, but the work was then going on and has since been completed. The main entrance is in the center of the south end; near it is the new brick lodge built during the past season. It is a long, one-story building, containing three rooms of nearly equal size and shape, having a piazza all around, and roof extending over piazza, in railway-station style. The old lodge, a small wooden cottage, has been moved a few feet in rear of the new one, and is used as a kitchen.

There is a well of good water near the lodge, also dug during the past season.

From the main entrance an avenue extends due north through the lot, passing around a small circular mound in the center, on which stands the flag-staff. A similar avenue crosses this one at right angles, at the flag-staff mound, from center of east and west sides; thus dividing the grounds into four large sections, which are subdivided by six other paths, running east and west, into fifteen smaller sections, fourteen of which are used for burial purposes, and one contains the lodge and out-buildings.

Two small iron guns are planted vertically, as monuments, near the flag-staff.

The ground is high through the center of the cemetery, north and south, particularly about the flag-staff mound, and falls off rapidly to the east and west. The drainage is therefore good. The paths and

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avenues are lined with brick gutters. The building of the wall caused a great deal of extra work in the cemetery, and it was not, therefore, in as good order as usual.

An Osage-orange hedge was planted last spring along the inside of the fence; it will probably be so much damaged by the building of the wall as to require re-setting next spring.

There is a great want of foliage in this cemetery. A number of small elms were put out this season, but a variety of ornamental and forest trees are required. The grounds are very favorable for effective adornment by the judicious planting of suitable trees.

The graves are arranged in parallel rows in the burial sections; they are all leveled and well sodded, and marked by head-boards, painted and lettered, and in good order. A few marble slabs have been erected by friends, and a few specimen slabs, made of "Ransome's patent concrete, or artificial stone," have been put up, free of charge, by the manufacturers in Baltimore. These latter look very well, but require the test of many years' exposure in all climates before being adopted generally.

The interments, according to the records at the cemetery, are as follows, viz:

	Known.	Unknown.
White Union soldiers	2,343	129
Colored Union soldiers	14	5
Citizens and others	14	....
Total	2,371	134

The burials were principally from the hospitals at Camp Parole, near Annapolis, and were mostly of returned prisoners of war.

One man is employed to assist the superintendent; he is paid $25 per month.

The expenditures up to the 31st of August, 1871, amount to $17,205.01.

LOUDON PARK NATIONAL CEMETERY.

Inspected July 21, 1871.

This cemetery is situated within the incorporated cemetery of same name, three and a half miles west of Baltimore, on the Catonsville turnpike.

The Government lot is in the northeast corner of that cemetery, fronting about thirty-four yards on the Catonsville pike, and extending along the east side about two hundred and twenty-five yards; the west side is irregular, curving in and out to conform to the avenue that bounds it on that side.

The lot is separated from the main cemetery by a light iron fence, erected by the Government. The north and east sides are inclosed by the boundary fences of the corporation—the former a heavy iron fence, the latter a frail wooden one; but this last is to be replaced by a substantial stone wall; and the Government will build the portion bounding its lot, in consideration of a fee-simple title to the land. There are a few large oaks in the north end of the lot, and a row of young trees lines the west side, between the fence and the avenue just outside.

The graves are arranged in long rows, parallel with the east side; they are all mounded up and sodded. The grass had just been cut from the greater portion of the graves at the time of this inspection; but the portion not cut was thick with thistles and coarse weeds.

I was told that no work was done on the lot until after Decoration

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Day, and that much dissatisfaction was expressed by the visitors, on that occasion, at its neglected appearance.

The graves are marked by head-boards, painted and lettered, but faded and more or less decayed; some have fallen down.

There are a few specimen slabs of "Ransome's patent concrete," and a few marble slabs have been erected by friends of the deceased.

Two small iron guns have been set up vertically on their bases, in masonry, as monuments.

A small pole is also standing in the grounds; it has been used for a flag-staff occasionally.

Formerly there was a superintendent nominally in charge of this cemetery, but he has been discharged, and the place is now under the control of the post quartermaster at Fort McHenry.

The interments are reported as follows, viz:

Commissioned officers	
White Union soldiers, known	1,4[illegible]
White Union soldiers, unknown	1[illegible]
Citizens, &c.	
Rebel soldiers, prisoners of war	12[illegible]
Total	1,7[illegible]

The burials were generally from the hospitals, in Baltimore, at the Relay House, and at Elkridge Landing.

The expenditures up to August 31, 1871, amount to $10,682.25.

ANTIETAM CEMETERY.

Inspected September 26, 1870.

This cemetery is situated on a portion of the battle-field of Antietam, and was occupied as the headquarters of the rebel General Lee. It fronts north on the Boonsborough and Sharpsburgh turnpike, and is about half a mile east of the latter village.

The land was purchased and the cemetery incorporated by the State of Maryland, in March, 1865. The cemetery is in charge of the "Antietam Cemetery Association," composed of delegates from the several States having soldiers interred therein.

The lot is an irregular figure of four sides, and contains ten acres of rolling land. It is the summit of a ridge running north and south and commanding very fine and extensive views. Originally the ground sloped rather sharply to the east, but it has been graded to a gentle and uniform slope. It is inclosed by a massive stone wall on three sides. This wall varies in height according to the slope of the ground, but on the inside a uniform height of 4 feet 3 inches, below the coping, has been obtained by grading. In some places the wall is 12 feet high on the outside. On the north side there is a stone wall and coping about 3 feet high, surmounted by an iron fence. This extends from the main entrance, which is in about the center of the north front, east and west to within about 100 feet of the ends of the lot on that side. The balance of this front is covered by a stone wall similar to that on the other side.

The main entrance is closed by handsome iron gates. Near it is the lodge, built of stone, two stories high, with a small square tower crowned with a battlement, on which is a small flag-staff.

This lodge and the inclosing walls of the cemetery have been very expensive, and have exhausted the available funds of the association so that the grounds have not received the attention that was contemplated.

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The cemetery has been laid out on a very handsome plan, but is not yet completed. No work, scarcely, has been done this season.

The grave-plats are arranged by States. The graves are leveled and well sodded. They were marked by head-boards, but a great many have rotted off and fallen down. Many trees and shrubs have been transplanted here, but they are not doing well.

In grading the lot the soil was removed from a great portion of it, and there is consequently very little to support vegetation in these places.

The interments are reported as follows, viz:

	Known.	Unknown.	Total.
Maine	88	8	96
New Hampshire	24	1	25
Vermont	56	9	65
Massachusetts	128	74	202
Rhode Island	22	1	23
Connecticut	80	5	85
New York	726	136	862
New Jersey	65	5	70
Pennsylvania	546	84	630
Delaware	28	.....	28
Maryland	84	6	90
West Virginia	170	2	172
Ohio	320	29	349
Indiana	136	8	144
Illinois	28	1	29
Michigan	100	37	137
Wisconsin	130	12	142
Minnesota	10	.....	10
Iowa	2	.....	2
United States regulars	78	7	85
Officers	31	7	38
Organizations unknown	42	1,361	1,403
Total	2,894	1,763	4,687

Of these, 1,475 were the killed and wounded in the battle of Antietam who were originally buried near by. These remains were removed by the Cemetery Association. The balance of the bodies were brought from the battle-fields of Monocacy and South Mountain, and from Harper's Ferry and other places, at the expense of the United States.

When this cemetery is completed it is proposed to transfer it to the United States.

Recapitulation for State of Maryland.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Citizens and others.	Rebel prisoners of war.
Annapolis National Cemetery	2,343	129	14	5	2,491	14	.....
Antietam Soldiers' Cemetery	2,894	1,793	.....	.....	4,687	.....	.....
Loudon Park Cemetery, Baltimore	1,480	166	.....	.....	1,646	5	139
Laurel Cemetery, Baltimore	.....	.....	229	.....	229	.....	.....
Point Lookout	.....	.....	.....	.....	.....	.....	2,159
Total	6,717	2,088	243	5	9,053	19	2,298

DISTRICT OF COLUMBIA.

SOLDIERS' HOME NATIONAL CEMETERY.

Inspected October 18, 1871.

This cemetery is situated in the District of Columbia, on land belonging to the Old Soldiers' Home, but which has been devoted to this pur-

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pose by consent of the commissioner of the Home and the Honorable Secretary of War.

The lot fronts southwest on the road leading from Rock Creek church to North Capitol street via Glenwood Cemetery. It is an irregular figure of several sides, but is nearly triangular, and contains about nine acres as inclosed by the new stone wall, which includes the lot used for the burial of the inmates of the Home, but which was formerly outside this cemetery. This arrangement improves the appearance of both lots. The front of the cemetery is covered by a light iron fence, also new; and a stone lodge has been erected during the past year near the main entrance in the northwest corner.

The flag-staff is in front of the lodge, and a small green-house in rear.

The grounds are divided into several burial sections by graveled walks parallel to the two main sides of the lot.

The graves are arranged in these sections in parallel rows; all are leveled and pretty well turfed and the grass neatly trimmed. The narrow paths along each row of graves have been discontinued and are partially covered with grass. The graves are marked by head-boards, painted and lettered, but much faded and badly decayed. Several marble slabs have been erected by friends of the deceased.

Fresh gravel has recently been put on the walks, and they are lined on each side by brick gutters in good order. The drainage is good.

There are many evergreens, principally cedars and Norway spruces, growing well. There are also a few other trees and many ornamental shrubs in the grounds.

About the lodge are several flower-beds neatly arranged and filled with flowers.

Several arbors containing seats have been erected in different parts of the cemetery, and are more or less covered with vines.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	20	....
Enlisted men	5,070	27
United States sailors	2	....
Citizens, employés, &c	117	....
Rebel prisoners of war	125	....
Total	5,334	27

The burials were principally from the general hospitals near Washington City, prior to May 14, 1864.

The expenditures up to August 31, 1871, amount to $69,816.28.

BATTLE-GROUND NATIONAL CEMETERY.

Inspected October 18, 1871.

This cemetery is situated in the District of Columbia, on the Seventh street road, about half a mile north of the village of Brightwood, and a little beyond Fort Stevens.

The lot is a square of about seventy yards, and contains one acre. It is inclosed by a stone wall, built this season, of blue stone, laid in mortar, with exterior buttresses every twenty-five feet. The coping has not been put on yet, but when completed the wall will be very substantial and look well.

The entrance is in the center of the west side, from the Seventh-street road, and is closed by double iron gates, hung on square posts of dressed Seneca stone. Near this entrance is the new lodge, erected during the past

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season. It is built of Seneca stone, is one story high, with low roof, and contains three rooms; one for the office, and open to visitors; one for a kitchen, and one for "living-room." This is the general arrangement in all the lodges. The old lodge, a small wooden cottage, remains on the grounds.

After considerable difficulty, a well of good drinking-water has been obtained near the new lodge.

In the center of the lot is a low circular mound, about 20 feet in diameter, on which stands the flag-staff. Around this mound is a graveled walk; and exterior to this walk is a circular belt, 16 feet wide, in which are the graves of the forty Union soldiers (all known) who fell near this place in the skirmish with Early's raiding party, July 12, 1864.

A graveled walk surrounds this belt, and four avenues, eight feet wide, lead into it, at right angles to each other, from the centers of the sides of the lot. The four sections into which the grounds are thus divided, and the circular belt, as well as the flag-staff mound, are well covered with turf.

There are a good many trees and shrubs growing in this cemetery. An Osage-orange hedge has been planted along the inside of the wall and the plants are growing very well.

The graves are marked by head-boards, painted and lettered, but a good deal faded.

The expenditures amount to $7,890.62 up to 31st August, 1871.

WEST VIRGINIA.

GRAFTON NATIONAL CEMETERY.

Inspected June 16, 1871.

This cemetery is situated about half a mile southwest from the railway station in Grafton, and is bounded on the north by the Parkersburgh branch of the Baltimore and Ohio Railroad.

The lot is a rectangle of 387 feet east and west, by 285 feet north and south, as inclosed, but on the south side there is a strip about 50 feet wide outside the fence belonging to the Government purchase.

The main entrance is in the center of the south side, from the county road, but there is also a narrow entrance in center of north side. A walk, ten feet wide, paved with bricks, connects these two entrances, and divides the lot into two equal parts. The ground sloped moderately to the north, and has been cut into three terraces, running east and west, and at equal distances from each other; and each being ascended by a flight of steps connecting the sections of the brick walk.

The upper, or southern terrace, contains the lodge, tool-house and gardens; the middle and lower terraces are used for burial purposes.

The lot is inclosed by a wooden picket-fence, in good condition. An Osage-orange hedge has been planted along the inside of the fence, and a drive extends around the lot a few feet inside the hedge. There are a few trees growing in the grounds; more are needed.

A flag-staff stands in the center of the lot.

The lodge is a wooden cottage, in very good condition. There is a well of good water near it.

There is an unfinished terrace in the strip of land outside the fence,

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on the south side; it is unsightly, and liable to wash down into the cemetery below.

The graves are arranged in parallel rows, in the middle and lower terraces. They are all leveled and well sodded, and are marked by head-boards, painted and lettered, and in pretty good condition.

The interments are as follows, viz:

White Union soldiers, known	639
White Union soldiers, unknown	613
Total	1,252

The bodies were removed from Wheeling, Rich Mountain, and other places in the State.

The expenditures up to August 31, 1871, amount to $80,348.08.

The ground is not yet paid for.

Recapitulation for District of Columbia and West Virginia.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Citizens and others.	Rebel prisoners of war.
Soldiers' Home National Cemetery	5,092	278	.....	.....	5,370	117	12
Battle-Ground National Cemetery	40	.....	.....	.....	40	.....	.....
Congressional Cemetery	79	.....	.....	.....	79	.....	.....
Grafton National Cemetery, West Virginia	639	613	.....	.....	1,252	.....	.....
Total	5,850	891	.....	.....	6,741	117	12

VIRGINIA.

NATIONAL CEMETERY AT COLD HARBOR.

Inspected July 25, 1871.

This cemetery is situated on the White-House road, about 12 miles northeast of Richmond via the Nine-Mile road. The lot is a rectangle, being about 220 by 240 feet on the sides, and is divided into four equal sections by two walks, 10 feet wide, crossing each other at right angles from the center of each side. At the intersection of these walks is a small circular mound on which stands the flag-staff.

A large iron gun is planted vertically on its base as a monument, near the flag-staff mound.

A similar walk surrounds these sections just inside the brick wall, which was nearly completed at the time of this inspection.

An Osage-orange hedge was planted last spring along the inside of the fence, but it has been nearly ruined by the building of the wall; will probably have to be reset next spring.

The entrance is in the center of the south side, and opens onto the White-House road.

The lodge, a small wooden cottage, has been removed a short distance to make room for a new lodge, to be built of stone, this season. The work is already contracted for.

The single graves (1,062) are arranged in parallel rows in the four sections; they are well covered with sod, and are marked by head-boards painted and lettered, and still in pretty good condition.

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On the north side of the cemetery are two long trenches, one containing the remains of five hundred and sixty-eight, and the other three hundred and twenty-one Union soldiers, all unknown by name.

The whole number of interments is as follows:

Commissioned officers, known	45
Enlisted men, known	531
Commissioned officers, unknown	5
Enlisted men, unknown	1,270
Total	1,951

One laborer is employed to assist the superintendent through the season; he is paid $20 per month. The superintendent was quite sick at the time of this inspection, and died a few days after.

There is a well of good water within the cemetery, near the main entrance and the lodge.

There are also a good many small trees growing along the walks and among the graves.

The remains of the dead were gathered from the battle-fields of Gaines's Mill and Cold Harbor (near by) and other places in the vicinity.

The expenditures up to June 30, 1871, amount to $18,007.17.

NATIONAL CEMETERY AT SEVEN PINES.

Inspected July 25, 1871.

This cemetery is situated at the junction of the Nine-Mile road with the Williamsburgh turnpike, about eight miles east of Richmond. The lot is about 200 feet square, as inclosed by a wooden picket-fence, but there is, on two sides, a strip of land about 15 feet wide between the fence and the two roads above named, belonging to the Government purchase.

The lot is divided into four equal sections by walks 10 feet wide, crossing each other at right angles from the centers of the four sides. At the intersection of these walks, which is in the center of the lot, is a small circular mound, on which stands the flag-staff. A large iron gun is planted as a monument in the walk surrounding the flag-staff mound.

A walk 10 feet wide surrounds the sections and passes a few feet inside the fence. All of these walks are lined on each side with brick gutters. The drainage is pretty good.

Last spring an Osage-orange hedge was planted just inside the fence. Many plants failed. Those living are doing well; they have been kept free from weeds and are well cultivated.

There are a few small trees in the lot; outside the fence, on the south front, (along the Williamsburgh pike,) seven pine trees have been planted by the superintendent, and are growing finely.

The entrance is in the center of the south front. The lodge is near it; it is a small wooden cottage in poor condition. A new lodge and a tool-house should be built next year. There is a tube-well and pump for supplying water.

The graves (790) are arranged in parallel rows in each section. They are pretty well turfed over and the grass well trimmed. They are marked by head-boards, lettered and painted, and in pretty good order.

The interments are as follows:

	Known.	Unknown.
White Union soldiers	141	1,209
Colored Union soldiers	--	7
Total	141	1,216

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The remains were removed from the battle-fields in this vicinity—Fair Oaks, Seven Pines, &c.

One laborer is employed to assist the superintendent; he is paid $20 per month.

The expenditures up to 31st October, 1870, amount to $64,020.87.

NATIONAL CEMETERY AT RICHMOND.

Inspected July 24, 1871.

This cemetery is about three miles from Richmond, on the Williamsburgh turnpike, just beyond the first toll-gate.

The lot is a rectangle, about 700 feet east and west by 500 feet north and south, and contains eight acres.

The main entrance is in the center of the north side, on the Williamsburgh pike. An avenue 20 feet wide extends from this entrance to the center of the south side, passing around a mound 50 feet in diameter and 8 feet high, on which stands a fine flag-staff.

A similar avenue intersects this one at right angles at the flag-staff mound, and extends to the centers of the east and west sides.

These two avenues divide the lot into four large equal sections, which are each subdivided by paths 10 feet wide (two running north and south and one east and west) into six small sections, making twenty-four in all.

Of these, twenty-three are used for burial purposes, and one, on west side of entrance, contains lodge and out-buildings.

There is also a drive extending around the grounds just inside the boundaries.

The lot is inclosed by a wooden picket-fence, which is now being replaced by a stone wall; a portion on the north side is completed except the coping.

An Osage-orange hedge was planted last spring along the inside of the fence; the plants have started well, but will be damaged by the building of the wall.

The walks and drives are lined on each side with brick gutters, and have suitable brick culverts, laid in cement, to carry off the surface-water, making the drainage good, as the ground slopes very gently toward three of the sides.

On the flag-staff mound there is an arbor covered with trailing vines, and four iron guns are planted vertically, as monuments, at equal distances from each other, in the drive surrounding the base of the mound. There are four other arbors in the grounds, one being in the center of each of the large sections.

Many young trees have been set out from time to time in the grounds, and some are doing very well; others will require to be replaced by healthier ones. There is a small green-house attached to the lodge, and many flowering plants and shrubs are propagated in it and in the proper season placed in the grounds.

The superintendent is quite an amateur florist.

The lodge is a new brick cottage, one and a half stories high, with three rooms on ground floor and three chambers, French roof, and dormer windows.

The style is very neat and the building is very comfortable. Cost, $2,700. There is a well of excellent water near the lodge. Tool-house and out-buildings in good order.

The graves are arranged in parallel rows in each section. They are

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all leveled and marked with head-boards, painted, lettered, and numbered. Many of the graves have fallen in and will require to be filled. The turf is not good on the graves, the soil being poor. The superintendent has considerable rotted manure on hand, with which he proposes to top-dress the ground in the fall. This will improve the sod.

The interments number as follows:

White Union soldiers, known	803
White Union soldiers, unknown	5,665
Marines	2
Citizens	8
Employés	3
Servants, (colored)	2
Total	6,483

Of the unknown, 202 have been taken from the places of original interment by the superintendent and brought here since my inspection last year. Some few Union soldiers are still buried outside the cemetery, but their remains will soon be brought in and buried with their comrades.

The burials in this cemetery are from the many battle-fields around Richmond, and from cemeteries in the vicinity, in which the dead Union prisoners of war confined in Richmond were buried.

The superintendent, Patrick Hart, is a very efficient man, and discharges his duties faithfully and well; but the building of the stone wall and the want of sufficient laborers have prevented him from keeping this cemetery in proper order this season. One man has been employed as an assistant at $25 per month. Additional laborers have been authorized to be employed.

The expenditures amount to $99,594.28 up to July 31, 1871.

NATIONAL CEMETERY AT GLENDALE.

Inspected July 26, 1871.

This cemetery is situated on the Quaker road, about fifteen miles southeast from Richmond, via Charles City road.

The lot is a rectangle of about 300 feet by 280, and contains $2\frac{1}{8}$ acres.

The entrance is in the center of the north side, from the Quaker road. From this entrance a walk ten feet wide extends through the lot to center of south side, passing around a small circular mound on which stands the flag-staff. A similar walk crosses the lot from the center of east and west sides, dividing the grounds into four equal sections.

The graves are arranged in circles concentric with the walk around the flag-staff mound, and extend back nearly to the exterior of the lot at the center of the sides.

A circular walk surrounds the outer circle of graves, and cuts off in each of the four corners a triangular plat. These plats are used as flower and vegetable gardens.

There is a large iron gun planted vertically as a monument near the flag-staff mound.

The lodge is near the main entrance. It is a small wooden cottage containing three rooms; is in very good order and seems to be very comfortable.

The lot is surrounded by a wooden picket-fence in good condition.

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Since my inspection last year the fence on north front has been moved outward about fifteen feet, and the ground thus inclosed devoted to flower-beds, which are covered with showy annuals.

The graves are well grassed over, and are marked by head-boards painted and lettered. They number 648. The interments are as follows:

	Known.	Unknown
White Union soldiers	230	949
Colored Union soldiers	6	1
Total	236	953

These bodies were removed from Malvern Hill, two miles distant, and from other places near by.

The superintendent, Amos J. Potter, was on a leave of absence at the time of this inspection.

One man is employed as an assistant. He is paid $25 per month.

The expenditures amount to $15,538.35 up to May 31, 1871.

NATIONAL CEMETERY AT FORT HARRISON.

Inspected July 26, 1871.

This cemetery is about eight miles south of Richmond, on the Varina road.

The lot is a rectangle of about 220 feet by 180, and is inclosed by a wooden picket-fence, in pretty good condition. There is a strip of land belonging to the cemetery outside the front fence, between it and the road.

The entrance is in the center of the east side. From this entrance a walk ten feet wide extends to center of opposite side. A similar walk extends from the centers of north and south sides. At the intersection of the two walks is a small circular mound, upon which stands the flag-staff. A large iron gun is planted vertically on its base in the walk surrounding this mound.

A new lodge is being built near the main entrance. This lodge is of stone, one story high, flat roof, and contains three rooms.

The old lodge, a small wooden structure, was moved off a short distance to make room for the new one. The superintendent is living in it yet. When the new building is completed this one will be used as a kitchen. A few graves had to be removed to make room for these changes.

The graves number 565, and are arranged in parallel rows in the four sections. They are well grassed over, and are marked by head-boards, painted and lettered, and in tolerably good condition.

The interments are as follows:

White Union soldiers, known	239
White Union soldiers, unknown	375
Total	614

The bodies were removed from the places of original interments around Fort Harrison and other places in this vicinity.

There are quite a large number of small trees growing in this cemetery and many are doing well. There is a well of good water within the inclosure. The cemetery is in very good order, considering the fact that building has been going on for some time.

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One man is employed to assist the superintendent. He is paid $20 per month.

The expenditures up to July 31, 1871, amount to $12,078.12.

NATIONAL CEMETERY AT CITY POINT.

Inspected July 27, 1871.

This cemetery is situated about one mile from the City Point landing, and one-half mile west of the City Point and Petersburgh Railroad.

The lot is a rectangle, 620 feet north and south, by 420 feet east and west, with a semicircular projection of 110 feet in center of east side, in which is the main entrance.

From the main entrance a drive extends on each side, following the curvature of the fence till it reaches the line of the east side proper, then crosses the lot perpendicularly to the west side. A similar drive crosses the lot from the center of the north and south sides, dividing the ground into six large divisions, each of which is subdivided into four sections by paths crossing each other at right angles from the center of the sides.

At the intersections of the drives are two circular mounds, on one of which is the flag-staff, (top-mast gone,) and on the other is the fine monument erected by the "Army of the James" in memory of its noble dead.

The lot is inclosed by a wooden picket-fence, in pretty good condition. An Osage-orange hedge was planted along the inside of the fence last spring.

The lodge is situated near the main entrance in the semicircular projection. It is a small wooden cottage, in poor condition. The grounds in front of the lodge have been tastefully laid out, and planted with flowers and shrubs.

Two iron guns are here planted vertically as monuments.

There are some trees growing along the drives and walks, deciduous and evergreen.

The graves are arranged in parallel rows in each of the sections. They are well sodded, and marked by head-boards, painted and lettered.

The graves number 5,156. The interments are as follows:

	Known.	Unknown.
White Union soldiers	2,937	850
Colored Union soldiers	782	587
Total	3,719	1,437

There are also interred in this cemetery the remains of 151 rebel soldiers.

The bodies here buried were removed from the original places of interment, from the different hospitals of the "Army of the Potomac" and the "Army of the James," while investing Petersburgh.

Owing to the want of sufficient assistance, the superintendent has not been able to keep this cemetery in proper condition. Additional laborers have been authorized.

One man has been employed so far this season; he is paid $20 per month.

The expenditures amounted to $65,353.53 up to May 31, 1871.

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POPLAR GROVE NATIONAL CEMETERY.

Inspected July 27, 1871.

This cemetery is situated about five miles southeast of Petersburgh, and one-half mile south of the Weldon Railroad.

The lot is an irregular figure of eight sides, although the original purchase of seven acres was a parallelogram of 660 feet east and west, by 478 feet north and south; but the addition of one and one-tenth acres was on two sides of the southwest corner of this purchase.

About one-third of the lot, the northwest portion, is quite undulated and is covered with a grove of large pines; the remainder is nearly level and open. It is inclosed by a wooden picket-fence in poor condition; posts good yet, but rails much decayed.

An Osage-orange hedge was planted along the inside of this fence last spring, and is doing well.

The entrance is in the west side of the addition, and the lodge is near it. This is a small wooden cottage in poor condition. A contract for building a new lodge was given out last season, and the excavations for the foundation were made, and then the contract was thrown up. A new contract has been made this season. Near the center of the lot is a circular mound about fifty feet in diameter and eight feet high, on which stands the flag-staff. A wide avenue surrounds this mound, and from it four other avenues radiate in curved lines toward the four corners of the original purchase, and emerge into another avenue, which circles around the flag-staff mound nearly tangent to three sides of the lot, and then passes by the lodge to the main entrance. Between the four radiating avenues at the mound are four circular segments filled with flower-beds and shrubs; and in each is, also, a large iron gun, planted vertically, as a monument.

In this portion of the grounds the graves are arranged in circles concentric with the segments, and extending back to the exterior avenue. In the remainder of the burial sections the graves are arranged in parallel rows. In all, they are well covered with turf, and are marked by head-boards painted and lettered, but many of them are badly decayed. Many of the graves have fallen in, and require to be filled up.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	60	25
White Union soldiers	1,906	3,[illegible]63
White Union sailors	3	.....
Colored Union soldiers	60	29[illegible]
Citizens	6	.....
Rebel soldiers	15	23
Total	2,050	4,137

The bodies were mostly removed from the investing lines around Petersburgh, and from Ream's Station, and other places in this vicinity.

The remains of three unknown white Union soldiers have been removed from places of original burial, and interred in this cemetery by the superintendent since my previous inspection.

This cemetery is quite tastefully laid out, and looks well, although, owing to the want of sufficient help, the superintendent has not been able to keep it in proper order this season.

But one man has been employed so far; additional laborers have now been authorized.

The expenditures amounted to $109,362.80 up to May 31, 1871.

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NATIONAL CEMETERY AT HAMPTON.

Inspected August 2, 1871.

This cemetery is situated between Fort Monroe and the town of Hampton, and is quite near the latter.

It is an irregular figure of six sides bounded by straight lines, with a portion of the northwest side bounded by the windings of a creek; but the outline, to a casual observer, is nearly a parallelogram, about twice as long as wide. It contains $11\frac{61}{100}$ acres of level land, and is inclosed by a wooden picket-fence in good order. The entrance is in the center of the south side. The lodge, a small wooden cottage of three rooms, in good order, is near main entrance.

A drive extends around the grounds just inside the fence. An Osage-orange hedge has been planted this season between this drive and the fence; it is doing well.

On a line running north and south through the center of the lot are two circular grass-plats, about eighty feet in diameter; the south one is about one-third the depth of the lot from the main entrance, and contains a low mound on which stands the flag-staff; the other is about the same distance from the north end, and contains a very handsome granite monument, erected through the patriotic exertions of Miss Dix, to the memory of the Union soldiers buried here.

The grass-plat surrounding the monument is inclosed by an iron fence, the posts of which are three-inch rifle-cannon, and the pickets musket-barrels with bayonets fixed.

Two parallel avenues cross the lot from east to west, one at the flag-staff, the other at the monument; they are connected with each other by two drives perpendicular to them, one on either side of the monument and flag-staff, and half way between them and the exterior drive. An avenue also leads due north from the main entrance to the flag-staff mound, and from the monument to the north end of the lot. The drives are macademized and are in good order.

The graves are arranged in double parallel rows, feet to feet, with paths three feet wide between the rows of head-boards. The graves are grassed over, but the turf is poor.

The head-boards are painted and lettered, and are in pretty good order.

The whole number of graves is 5,129.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	25	....
White Union soldiers	3,519	402
White Union sailors	66	6
Colored Union soldiers	985	57
Women, children, &c	83	....
Total	4,678	465

These interments were mostly from the general hospitals in this vicinity; but bodies were removed from Big Bethel, Newport News, Norfolk, Portsmouth, Craney Island, and other places.

This cemetery is in very good order, considering the small amount of labor hired. But one man has been employed this season; he is paid $20 per month.

The expenditures up to May 31, 1871 amount to $56,116.29.

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NATIONAL CEMETERY AT DANVILLE.

Inspected August 18, 1871.

This cemetery is situated within the corporate limits of the city of Danville, and is about one mile from the center of the town.

The lot contains 3⅓ acres, but only about three acres are included in the cemetery proper. This portion is nearly in the form of a rectangle, of say 325 feet by 400 feet, and is inclosed by a wooden picket-fence in good order. The entrance is in the center of the north side from Lee street. The lodge is near this entrance; it is a small wooden cottage of three rooms, in good order.

Two avenues cross the lot at right angles to each other from the centers of the sides. At their intersection is a small circular mound on which stands the flag-staff. Two paths running north and south, one on each side of the avenue from main entrance, subdivide the four large sections into eight smaller and equal ones.

A drive also extends around three sides of the lot just inside the fence.

The walks and drives are graveled, and are kept clean and rolled hard. They are lined on each side by brick gutters in excellent order. The culverts are of wood and are decayed.

The ground is undulating and slopes rapidly in all directions from the center, so that the drainage is very good.

An Osage-orange hedge has been planted this season along the inside of the fence and is doing very well.

Many small trees have been planted, but with indifferent success. Many of the trees were of an inferior quality and damaged when planted.

On the west of the cemetery is a narrow strip of land used as a vegetable garden. It is inclosed by a wooden fence.

None of this land has been paid for yet, the title not being considered perfect.

The graves are arranged in parallel rows in each of the burial sections. They are mounded up and sodded, and marked by head-boards, painted and lettered, and in good order.

The interments are as follows, viz.:

	Known.	Unknown.
Commissioned officers	4	....
White Union soldiers	1,098	131
White Union soldiers, regulars	19	....
White Union sailors	4	....
Colored soldiers	37	12
Citizens, &c	8	....
Total	1,070	143

These interments were made principally from the hospitals for the Union prisoners of war confined near this place.

The cemetery is in good order. The superintendent has had one man to assist him this season. He is paid $20 per month.

The expenditures amount to $28,959.29 up to May 31, 1871.

FREDERICKSBURGH NATIONAL CEMETERY.

Inspected July 7, 1871.

This cemetery is situated about one mile from the railway station in Fredericksburgh on Mary's Heights, the celebrated intrenched position of the rebel army under Lee, in December, 1862.

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The lot contains a little over twelve acres; the north and east sides are bounded by straight, continuous lines, each about eight hundred feet long. The west and south sides are broken and irregular, following the windings of the bluff overlooking Hazel Run.

The entrance is near the center of the east side, which is at the foot of the Heights. The slope on this side is steep and has been cut into terraces; eight on the right and nine on the left hand side of the avenue leading from the main entrance up the Heights.

These terraces havs been carefully sodded, and brick gutters placed at the foot of each slope. They have withstood the action of rains and frosts pretty well so far, but they require constant watching, and immediate repair when any break occurs.

At the south end of the left-hand terrace is a road-bed leading directly up the hill. There is great danger of this road-bed being gullied deeply, and it should be filled with trees and shrubs to hold the ground together.

The lot is inclosed by a wooden picket fence in pretty good condition. The ground is divided up into several burial sections, of different sizes and shapes, by the drives winding around and crossing through it. The main avenue divides to the right and left near the entrance, and a triangular grass-plat lies in the fork.

Near the center of the plateau above the terraces is a small circular mound on which the flag-staff stands, and around which are planted four large iron guns as monuments.

Another mound is situated on the Heights just above the upper left-hand terrace. This mound is designed for the location of a monument, should one be built to commemorate the battle.

A new stone lodge has been built this season on the site of the old wooden one near the entrance. The well was destroyed in building this lodge. There is now no water in the cemetery. I recommend that a cistern be built.

An Osage orange hedge has been planted just inside the fence this season, but has not done well owing to want of proper cultivation.

The graves have been arranged in single rows in the several terraces and in the burial sections. They are well grassed over and marked by head-boards, painted and lettered.

But little of the grass had been cut, and very many coarse weeds were to be seen.

But one man was employed to assist the superintendent. This force was entirely inadequate to perform the labor necessary to keep the place in proper order. Additional laborers have since been authorized.

The number of graves is 6,603.

The interments are as follows, according to the records at the cemetery, viz:

	Known.	Unknown.
Commissioned officers	98	35
White Union soldiers	2,293	12,807
White Union sailors	4	.....
Colored Union soldiers	2	2
Total	2,397	12,844

The bodies were removed from battle-fields of Fredericksburgh, Chancellorsville, the "Wilderness," and other places. During the past year the remains of six unknown Union soldiers have been removed from places of original burial and interred in this cemetery.

The expenditures amount to $183,332.69 up to July 31, 1871.

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ALEXANDRIA NATIONAL CEMETERY.

Inspected October 13, 1871.

This cemetery is within the corporate limits of the city of Alexandria, and is in the southwest part, adjoining the city cemeteries.

The lot is a rectangle, of 740 feet north and south by 240 feet east and west, and is inclosed by a Seneca-stone wall; laid in mortar—built this season—coping not yet put on. The main entrance is in center of east side; is closed by double iron gates over carriage-way, and two small side-gates, all supported by four square posts of dressed Seneca stone.

A new lodge has just been erected near this entrance; it is also built of Seneca stone; is one and a half stories high, with French roof; has three rooms on ground-floor, and three chambers. This lodge is much prettier in style and far more convenient than the one-story, low-roofed lodges built lately at several of the cemeteries.

In my opinion it is desirable that the superintendents should be married men, and I think the lodges should be built to accommodate, comfortably, small families.

From the main entrance an avenue fifteen feet wide extends due west to near the center of the lot, then turns to the left and runs to the center of the south end.

In the center of the lot is a natural mound, on which is a small fountain and stone basin. Immediately west of the fountain is the flag-staff, from which a foot-path, six feet wide, extends to the narrow entrance in center of west side. A similar walk extends from fountain to the center of the north end of the lot. These walks and the avenue divide the grounds into four large sections.

The graves are arranged in these sections in parallel rows, with paths three feet wide between the rows.

The avenue is paved with cobble-stone, and the walks and paths are graveled, and all are kept clean and hard.

The graves are all leveled and well turfed, and the grass neatly trimmed. They are marked by head-boards, painted and lettered, and strapped near the top with hoop-iron.

A great many handsome trees and shrubs, selected with care and taste, line the avenue and walks; and numerous flower-beds, laid out in the form of the several corps-badges, are filled with choice flowers.

The superintendent is an amateur florist, and takes great pride and pleasure in cultivating the finest varieties of flowers. A small green-house is located in the southwest corner in which the plants are kept in winter.

There is a small pond near this green-house, receiving the overflow of the fountain.

This cemetery has been laid out with good taste, and is kept in excellent order.

The interments are as follows, according to the records at the cemetery, viz:

White Union soldiers	3,277
Colored Union soldiers	249
Rebel soldiers, prisoners	29
Total	3,555

One officer of the Regular Army was interred during the past year in addition to the above.

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The bodies were principally removed from the burial-grounds of the numerous hospitals around Alexandria.

The remains of several have been removed by friends. Quite a large number of marble slabs have been erected also by friends.

One man is employed to assist the superintendent. He is paid $30 per month.

The expenditures amount to $37,786.04 up to August 31, 1871.

ARLINGTON NATIONAL CEMETERY.

Inspected October 21, 1871.

This cemetery is situated on the Virginia side of the Potomac opposite Washington City, and includes that portion of the "Custis estate" known as Arlington Heights.

The grounds front (east) on the Georgetown and Alexandria turnpike about 3,500 feet, and embrace about two hundred acres of uneven land, mostly wooded, partly open groves of oak, and partly heavily timbered with dense under-growth.

A substantial wall has been erected this season around the grounds. It is built of Seneca stone, laid in mortar, and has exterior buttresses every twenty feet. The coping has not been put on yet, but has been contracted for.

The main entrance is near the south end of the east front, and is to be spanned by an arch of massive masonry, crowned by appropriate emblems, and to be closed by heavy iron gates. This work is now being prosecuted.

A wide avenue, lined by paved gutters on each side, leads up to the old mansion and west through the grounds.

There are two other entrances for carriages in the east front; one near the north end, the other some three hundred yards farther south.

Near each of these entrances is a small wooden cottage for the gate-keepers, and drives extend from them to the main avenue on the summit of the hill. The northern drive winds through the open grounds first used for burial purposes; but this proving insufficient, the comparatively level plateau southwest of the mansion was selected, and there the interments were principally made.

The graves are arranged in parallel rows, and originally a narrow path ran along the head of every second row; but most of these paths are now discontinued.

The main avenue bounds this burial section on the north, and a branch winds through to the southwest corner and then follows the west line of cemetery just inside the wall to the main avenue at the west entrance, which has no gates. This portion of the grounds contains about sixty acres, and is partly open and partly covered with open groves of large oaks.

The graves are all leveled and grassed over, but the turf is not very good, the soil being poor. They are marked generally by head-boards, painted and lettered, but some marble and other stones have been erected by friends; and a few specimen slabs of "Ransome's patent concrete" have also been placed here.

The old mansion has been repaired, and is used as the office and residence of the superintendent. The flag-staff stands in front of it; and near it is a handsome flower-garden. The main avenue passes around two sides of this garden, and between the garden-fence and the avenue are the graves of forty-five officers, all known.

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Just west of the garden is a large vault containing the remains of twenty-two hundred and eleven unknown Union soldiers gathered from the battle-fields of Bull Run, Chantilly, &c. Over this vault is a massive granite tomb, surmounted by four field-pieces on their carriages, with piles of cannon-balls between them.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	45	
White Union soldiers	6,979	3,9
Colored Union soldiers	175	
Total Union soldiers	7,199	4,0

There are buried in this cemetery, also:

	Known.	Unknown.
Employés and citizens	610	
Colored refugees, contrabands, &c	3,235	
Rebel prisoners of war	347	
Total	4,192	

The burials were mostly from the general hospitals around Washington, but bodies were removed from the Harmony and Congressional Cemeteries in the District of Columbia, at Point Lookout in Maryland, and also from the battle-fields above referred to.

The expenditures at this cemetery up to August 31 amount to $296,069.11.

CULPEPER NATIONAL CEMETERY.

Inspected August 8, 1871.

This cemetery is but a very short distance from, and is in plain sight of, the railway-station at Culpeper. It is about two hundred yards east of the Orange and Alexandria Railroad, from which it is approached by an avenue thirty feet wide, on each side of which is a row of shade-trees and a handsome picket-fence. The trees have been more or less damaged by cattle, but by replacing the dead and injured by good ones, and boxing them carefully, in a few years a fine effect could be produced.

The lot is an irregular figure of four sides, the north and west sides being nearly at right angles to each other and about 624 and 512 feet long, respectively; the other two sides making acute angles with these.

There are six acres of rolling land, inclosed by a wooden picket-fence in poor condition. The main entrance is in the center of the west side; it is spanned by a handsome wooden arch, and is closed by double wooden gates.

From this entrance an avenue sixteen feet wide extends through the lot to the center of the east side, passing completely around a small circular mound and circumscribing grass-plat in the center of the grounds.

A drive ten feet wide intersects this avenue at right angles at the mound, on which stands the flag-staff.

The ground is thus divided into four nearly equal sections.

The lodge is near the main entrance; is a wooden cottage of three rooms, in pretty good order and quite comfortable.

An Osage-orange hedge has been planted this season along the inside of the fence; the plants did not seem to be growing well.

There is a drive extending around the grounds just inside this hedge.

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All of the drives are covered more or less with coarse broken stone, and are lined on each side with brick gutters.

The ground slopes rapidly from the flag-staff to the west, and also somewhat to the northeast. The drainage is good, but the gutters require to be kept clean and open to prevent gullying.

The graves are arranged in parallel rows in the two lower sections; that is, those on the west side.

There are sixteen graves of commissioned officers in the plat surrounding the flag-staff mound.

A low lattice-fence surrounds this plat, except at the east and west entrances, where a brick walks leads to the mound. Two iron guns are planted near this plat, vertically, as monuments.

There are a few graves in the southeastern and only one in the northeastern section.

The upper side of the northwest section is laid out into flower-beds, which contain some showy annuals. There are also a good many flowers about the lodge.

There are a good many trees growing spontaneously in this cemetery, principally oaks and hickories; they were left standing when the grounds were laid out. Some other trees have been transplanted with success.

There is a very good turf over the graves, but the grass needed cutting. There was much ox-eye daisy and carrot-weed growing rank, and if allowed to seed and spread will soon drive out the grass. But one man was employed to assist the superintendent, and they had not been able to keep the grounds clean. Additional labor has been authorized.

The graves are mounded up and are marked by head-boards, lettered and painted. Some of the graves have fallen in and require to be filled up and sodded. The interments, according to the records at the cemetery, are as follows, viz:

	Known.	Unknown.
Commissioned officers	20	...
White Union soldiers	428	901
Total	448	901

The remains of six unknown soldiers were brought in and buried during the past year. The bodies were removed from the battle-fields of Cedar Mountain and Brandy Station; also from Gordonsville, and several other places in that vicinity.

The expenditures amount to $33,390.97 up to August 31, 1871.

STAUNTON NATIONAL CEMETERY.

Inspected August 8, 1871.

This cemetery is situated about one and a half miles east of the railway-station in Staunton, and is just south of the Chesapeake and Ohio Railroad.

It fronts south on the Richmond turnpike, and has the New Hope road for its western boundary.

The lot is a square of 216 feet, as inclosed, (by a wooden picket-fence in good order,) but on the north side there is a strip five feet wide, and on the east side a strip averaging eleven feet wide, outside the fence, belonging to the Government.

The entrance is in the center of south side, from the Richmond pike.

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From this entrance an avenue fourteen feet wide extends across the lot to center of north side, passing around a small circular mound in center of the grounds, on which stands the main-mast of a flag-staff, (top-mast blown off.)

A drive nine feet wide intersects this avenue, at right angles, at the flag-staff mound, and extends to centers of east and west sides. The lot is thus divided into four equal sections, which are surrounded by a drive nine feet wide, just inside the fence. These drives are lined by brick gutters on each side.

The ground slopes considerably to the north, making the drainage good.

An Osage-orange hedge was planted along the inside of the fence this season, and is doing well.

An iron gun is planted vertically near the flag-staff mound as a monument.

The old lodge, a small wooden cottage, has been removed a few feet to make room for the new stone lodge which has been commenced. The work had been suspended, at the time of this inspection, by the orders of the superintendent, on account of its inferior quality. A special report has been made by me on the subject.

The graves were arranged originally in parallel rows, with 160 graves in each section, but in making room for the changes at the lodge 63 bodies were exhumed and re-interred in what was the drive along the inside of the fence, on the north and part of the south sides. The graves are all mounded up and sodded, and the grass well trimmed; they are marked by head-boards, painted and lettered, and in good order.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	12	4
White Union soldiers	219	514
Total	231	518

The bodies were removed from Cross Keys, Port Republic, Waynesborough, Staunton, and other places in that section.

One man employed to assist the superintendent since July 10; he is paid $1.25 per diem.

The expenditures amount to $72,144.86, to include July 31, 1871.

WINCHESTER NATIONAL CEMETERY.

Inspected August 9, 1871.

This cemetery is situated about half a mile from the railway-station in Winchester, on the Berryville turnpike, upon which it fronts north.

The lot is a rectangle of 36 by 22 rods, and contains five acres of level land, which is inclosed by a wooden picket-fence in good order.

The entrance is in the center of the north side from the Berryville pike.

An avenue extends from this entrance to the center of south side, passing around a circular mound in center of lot, on which the flag-staff stands. A similar avenue crosses the lot from the centers of the east and west sides, and intersects this one at right angles at the flag-staff mound. Two wide paths cross the lot from east to west, each half way between flag-staff and north and south ends; and two similar ones cross it from north to south half way from central avenue and east and west

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sides. This lot is thus divided into sixteen large sections, each of which is subdivided into six squares for burial purposes by narrow paths.

At the intersections of the wide paths, which are in the centers of the four large divisions into which the lot is divided, are small circular mounds. Large iron guns are planted vertically as monuments on the two in the front half.

The lodge—a new stone structure, one story high, flat roof, three rooms—is near the entrance. The old lodge has been moved a few feet, and is still used by the superintendent. A well has been dug near the lodge; the water is thought to be bad, but if pumped out freely will prove good, I think.

The ground is so nearly level that the drainage is not very good in heavy rains. Brick gutters line most of the drives and paths, and assist in carrying off the water.

An Osage-orange hedge has been planted this season along the inside of the fence. A severe drought has injured the plants as well as many of the trees in the grounds.

The graves are arranged in parallel rows in the several sections, and are classified as far as practicable according to the States represented by the deceased. They are mounded up and sodded, and the grass well trimmed, and are marked by head-boards, painted and lettered, and are generally in good order. Some few have rotted off and fallen down. Some of the graves also have fallen in.

In the square appertaining to the State of New Hampshire a handsome granite monument has been erected to the memory of the forty-five officers and soldiers of the Fourteenth Regiment who fell in the battle of September 19, 1864.

Fifty-three bodies were removed from Harper's Ferry a year or more ago, and this season nine others have been brought from different places. These sixty-two graves have no head-boards or other marks, and some of them are not sodded.

The interments are as follows, according to the records at the cemetery, viz:

	Known.	Unknown.
Commissioned officers	53	9
White Union soldiers	2,030	2,323
Colored Union soldiers	3	6
Citizens, women and children	16	.....
Total	2,102	2,338

The bodies were removed from the battle-fields near Winchester, Martinsburgh, New Market, Front Royal, and other places in this section.

One man has been employed to assist the superintendent. He is paid $30. Extra labor was hired to remove the 117 bodies buried near the site of the new lodge.

The expenditures amount to $80,922.03, to include August 31, 1871.

NATIONAL CEMETERY AT BALL'S BLUFF.

Inspected August 10, 1871.

This little cemetery is situated about two miles from Leesburgh, on the Ball's Bluff battle-fields. There is no direct road to it, and the approach is by a roundabout way over a very bad private road.

The lot is a square of sixteen yards, and is inclosed by a red sandstone wall recently built; coping not yet put on. The entrance is in the south side, and is closed by a light iron gate.

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An Osage-orange hedge has been planted around the lot, three feet inside the wall. The plants have not grown vigorously.

There are twenty-five graves arranged on an arc of a circle, leaving a vacant space in front of the entrance, perhaps one-fourth of the circumference. The graves are leveled and grassed over, and have rose-bushes growing over them. They are marked by head-boards, painted and lettered. They are said to contain the remains of fifty-four Union soldiers who fell in the action at this place. All but one are unknown; that is, the remains could not be identified, although the names of all who fell are known.

The place is in charge of a citizen who lives near by. It is in pretty good order. The wall is high and the gate is kept locked, so there is very little danger of molestation or damage.

The expenditures amount to $820 up to August 31, 1871.

NATIONAL CEMETERY AT YORKTOWN.

Inspected August 15, 1871.

This cemetery is situated about one mile south of the landing at Yorktown, on the Hampton and Williamsburgh road, on which it fronts, (west.)

It is a square of about 330 feet, and contains $2\frac{772}{1000}$ acres of level land. It is inclosed by a wooden picket-fence in very good order. The entrance is in the center of west side. The lodge is near this entrance. It is a small wooden cottage; a contract has been made for building a new one of stone.

A drive extends from entrance due west through the lot, passing around a small circular mound in the center, on which the flag-staff stands. A similar drive crosses this one at right angles from the centers of the north and south sides. These two drives divide the lot into four large sections.

A drive extends around the lot also just inside the fence. These drives are all covered with clean white marl, rolled hard; and are lined on each side with brick gutters in good order.

An Osage-orange hedge was planted last spring along the inside of the fence and is doing finely. A good many small trees have been planted in the grounds, and a few are doing well.

There is a well of good water near the lodge; it has recently been dug.

There is a narrow strip of land on each side of the main entrance, along the west side, devoted to flowers and shrubbery. In the center of each strip is a large iron gun planted vertically on a little mound as a monument.

These guns and the flag-staff need painting.

The graves are arranged in parallel rows in the four sections, each containing 399 graves. They are all leveled, and well turfed over; and are marked by head-boards in poor condition, faded and rotten. They are to be replaced by stakes.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	11	2
White Union soldiers	716	1,422
Colored Union soldiers	6	5
White Union sailors	4	.....
Citizens	8	6
Total	745	1,435

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These interments were made principally from the dead of the Army of the Potomac while besieging Yorktown, and from the battle-field of Williamsburgh.

One man is employed as an assistant to the superintendent; he is paid $20 per month.

This cemetery is in good order. The expenditures amount to $37,064.13, up to May 31, 1873.

Recapitulation for the State of Virginia.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Citizens and others.	Rebel prisoners of war.
Cold Harbor National Cemetery	676	1,275	.....	.....	1,951	.....	.....
Seven Pines National Cemetery	141	1,209	.....	7	1,357	.....	.....
Richmond National Cemetery	805	5,665	.....	.....	6,470	13	.....
Glendale National Cemetery	239	949	6	4	1,189	.....	.....
Fort Harrison National Cemetery	230	575	.....	.....	814	.....	.....
City Point National Cemetery	2,937	851	782	587	5,156	.....	151
Poplar Grove National Cemetery	1,969	3,888	60	226	6,143	6	38
Hampton National Cemetery	3,610	408	985	57	5,060	83	.....
Danville National Cemetery	1,125	131	37	12	1,305	8	.....
Fredericksburgh National Cemetery	2,395	12,842	2	2	15,241	.....	.....
Alexandria National Cemetery	3,277	.....	249	.....	3,526	.....	29
Arlington National Cemetery	7,024	3,848	175	229	11,276	*3,929	347
Culpeper National Cemetery	448	901	.....	.....	1,349	.....	.....
Staunton National Cemetery	231	518	.....	.....	749	.....	.....
Winchester National Cemetery	2,063	2,332	3	6	4,424	16	.....
Ball's Bluff National Cemetery	1	53	.....	.....	54	.....	.....
Yorktown National Cemetery	731	1,424	6	5	2,166	14	.....
Total	27,922	36,868	2,305	1,135	68,230	4,069	565

*Colored refugees mostly.

NORTH CAROLINA.

RALEIGH NATIONAL CEMETERY.

Inspected August 16, 1871.

This cemetery is situated about one mile east of the State-house. It is just outside the corporation limits. The lot is a rectangle, 524 feet north and south, by 375 feet east and west, and contains about six acres. It is inclosed by a horizontal board fence, in poor condition. An Osage-orange hedge has been planted just inside the fence, and is doing pretty well considering the very dry season. The portion fertilized by stable-manure is much more vigorous than that treated with guano.

The main entrance is in the center of the west side, and is closed by wooden gates.

The lodge, a frame one-story cottage, in very good condition, is situated near the entrance.

A path, ten feet wide, extends around the lot just inside the hedge. Two paths, ten feet wide, running north and south, divide the lot into three long sections, and these are sub divided by seven other paths, running east and west, into twenty-three rectangular sections; the section in the center of the lot being a square of 114 feet, and double the size of the others, and containing a circular mound on which is planted the flag-staff.

The avenue from the main entrance passes entirely around this square and then extends to the center of the east side of the lot.

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An iron gun is planted vertically on its base in a large stone bed near the flag-staff mound. The bed is too large for the gun.

Many trees have been planted in this cemetery; those obtained in the neighborhood by the superintendent are growing better than those sent from a distance. The elm grows finely in this climate. There are many very handsome specimens in Raleigh. It seems to be liable to attacks from insects, and the foliage thereby greatly injured early in the season.

There is a well of good water near the lodge. The kitchen and tool-house are detached from the lodge; both in good order.

The graves are arranged in parallel rows in the several sections, and are classified by States as far as known. They are generally mounded up and pretty well grassed over. There is some broom sedge growing among the graves.

The grass has been cut often, and in consequence is still fresh and green, although the season has been an extremely dry one.

The graves are marked by head-boards, painted and lettered, but badly faded and a good deal decayed.

The interments are as follows, viz.:

	Known.	Unknown.
Commissioned officers	13	....
White Union soldiers	587	533
Colored Union solders	20	6
Citizens	1	....
Total	621	539

The bodies were brought from Averysborough, Smithville, Bentonville, Greensborough, Goldsborough, and other places in the State.

The title to the land has not yet been secured. When it is, a stone fence should be put around it.

There are quarries of limestone very near the cemetery.

One man is employed through the season to assist the superintendent.

The expenditures, up to April 30, 1871, amount to $16,552.08.

NEW BERNE NATIONAL CEMETERY.

Inspected April 28, 1870.

This cemetery is situated one mile north of the railway-station in New Berne, and fronts east on the Johnson Creek road.

The lot is a rectangle, 825 feet east and west, and 400 feet north and south, and contains 7½ acres of level sandy land. It is inclosed by a wooden picket-fence in poor condition. Since this inspection a contract has been made for building a stone wall and a stone lodge at this cemetery, and the work is now in progress.

The main entrance is in the center of the east side; from it an avenue twenty feet wide extends through the lot to center of west side.

An avenue sixteen feet wide crosses the lot from the center of the north and south sides at right angles to the main avenue. At the intersection of these avenues is a small mound, badly shaped, on which stands a fine flag-staff.

A drive sixteen feet wide passes around the lot a few feet inside the fence except on the east side, where it is 187 feet inside the fence. The portion of the lot embraced by this drive constitutes the cemetery proper, and is divided into eighteen burial sections by paths six feet wide running north and south.

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The graves are arranged in these sections in parallel rows. They are all leveled, and partially covered with Bermuda grass, which is growing well. They are marked by head-boards, painted and lettered, but much faded.

The burials were made by States, so far as known, and the unknown were buried in sections by themselves.

The interments are reported as follows, viz:

	Known.	Unknown.
Commissioned officers	22	1
White Union soldiers	1,726	806
White Union sailors	130	49
Colored Union soldiers	209	195
Employés and citizens	112	.....
Total	2,199	1,051

Some of these burials were made here originally. The balance of the bodies were removed from places of original interment, viz: New Berne, Beaufort, Morehead, Kinston, Hatteras, Roanoke Island, and many other places along the coast of North Carolina.

The eastern end of the cemetery lot is set apart for the lodge, out-buildings, and gardens. An Osage-orange hedge has been planted around the lot just inside the fence.

A good many elm trees have been transplanted into the cemetery proper, and are growing finely. The elm flourishes in this section and attains great size and beautiful proportions. Along the main avenue, in the vicinity of the flag staff, are fourteen imitation iron guns, planted vertically on their muzzles. They are placed opposite each other on each side of the avenue.

The lodge is in the southeast corner. It is a wooden cottage of two rooms, with kitchen detached. This lodge has recently been replaced by a stone one.

The tool-house and privy are under one roof, and present a much more respectable appearance than is usually found in such matters at the Government cemeteries.

Two men are employed to assist the superintendent; they are paid $15 per month and one ration per day.

The expenditures up to May 31, 1871, amount to $36,723.66.

WILMINGTON NATIONAL CEMETERY.

Inspected May 13, 1870.

This cemetery is situated about a mile and a half east of Wilmington, on the Market-street road, upon which it fronts south.

The lot is an irregular figure of several sides. The west side is a right line about 200 yards long, and the south end is perpendicular to it for about 70 yards. The rest of the contour is broken and wavy, to conform to the outline of an adjoining marsh, which is overflowed by the tide.

A drive fifteen feet wide extends from the main entrance in the south end through the grounds north and south. A drive also extends around the lot near the fence. The lodge is near the main entrance.

Since this inspection a new brick lodge and a stone wall have been built at this cemetery, and an Osage-orange hedge planted around it.

The land is very sandy, and will grow only Bermuda grass well. This has been introduced, and in time will cover the ground with a good turf. The roads and walks and gutters should also be planted with it.

The graves are marked by head-boards, painted and lettered, but many of them are much decayed.

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In the center of the lot, surrounded by the main drive, is a small circular mound, on which the flag-staff is planted. This mound is badly proportioned, and was sodded with turf from the marsh, which of course did not live.

The superintendent has been quite successful in transplanting willow and water oaks, and in cultivating roses and flowering shrubs.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	12	1
White Union soldiers and sailors	631	838
Colored Union soldiers	55	502
Total according to register at the cemetery	698	1,341

There are, however, 2,057 graves marked by head-boards.

The bodies were removed from Wilmington, Fort Fisher, Fort Johnson, Fayetteville, and other places in the State.

The expenditures up to May 31, 1871, amount to $17,656.46.

SALISBURY NATIONAL CEMETERY.

Inspected August 18, 1871.

This cemetery is situated about half a mile southwest from the center of the town of Salisbury. The North Carolina Railroad passes by it on the north. There is no public road to the cemetery, but vehicles can follow along the railroad embankment.

The Government has purchased about six acres of land, but only about two acres are inclosed, by a wooden picket-fence, for the cemetery proper.

This lot is nearly a rectangle, 390 feet long north and south, by 250 feet wide east and west. A portion of the northeast corner is cut off, to exclude a swampy place, so there are really five sides to the lot as inclosed. It is designed to build a permanent wall around the whole land purchased, and proposals were invited during the past season for this purpose, but none were accepted, as it was found the funds available were not sufficient.

The cemetery proper is about 225 yards south of the railroad, and a carriage-road has been commenced across the intervening space. There is a small stream running through this portion of the ground, bordered on each side by a narrow strip of marsh. This stream and the marshy margins pass along the east side of the cemetery also. There is consequently a good deal of miasma in that immediate vicinity, and fever and ague prevail very generally, but the present superintendent and his family have escaped so far.

The entrance is in the north end, in what would have been its center had not the northeast corner been cut off.

Near this entrance a one-story brick lodge has been erected. It is long and narrow, contains three rooms of equal size, and has a projecting roof and piazza on each side. It is in good order with the exception of the roof, which leaks in a few places. An underground cistern is attached to the lodge.

An Osage-orange hedge has been planted along the inside of the fence; on the east side, close to the fence, as the graves are very near it.

From the main entrance an avenue, eleven feet wide, extends south about fifty feet to the flag-staff mound, then divides to the east and west, and passes around the lot just inside the fence, except on the east side,

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where it is thirty feet from the fence, leaving a long narrow burial section containing ninety single graves.

Immediately opposite this section are the trenches in which are buried the poor unfortunate prisoners of war, who, huddled together in a small prison-pen, without shelter or proper food, or clothing, died miserably and in great numbers. Although death to these unhappy men was a release from torture, yet the remembrance of their unnecessary sufferings will ever justly brand the rebel authorities with gross inhumanity.

These trenches are eighteen in number, parallel to each other, and average about 240 feet in length. The bodies were placed one above another, and mostly without coffins. From the number of bodies exhumed from a given space it was estimated that the number buried in these trenches was 11,700. The number of burials from the prison pen cannot be accurately known, as no records have been found; but the above estimate is considered as being under the real number of deaths. Since this "Golgotha" passed into the possession of the United States each of these trenches has been surrounded by a stone curbing, to protect them from washing; and they have been mounded up a little, and efforts made to cover them with grass, but the soil is so poor but little success has attended the effort so far.

In my opinion the United States should erect, at the north end of these trenches, near the flag-staff, a respectable granite monument to the memory of the nameless "Union dead," who here moulder into dust; and I respectfully call the attention of the honorable Secretary of War to the subject.

On the west of these trenches are three burial sections, in which are the graves of 283 Union soldiers, mostly unknown. The graves are marked by head-boards, painted and numbered; they are also mounded up, and some are partially grassed over.

A decided improvement has been made in this respect since my inspection last year. I think it would be worth while to try Bermuda grass here.

The drainage is not good in a part of this cemetery; a portion to the southwest of the trenches is lower than any other part, and water stands there after rains. This could be remedied by filling up and preparing gutters to carry off the surface water.

A good many elm trees have been transplanted here during the present season, and some of them are living.

The interments are as follows, viz:

In the trenches, all unknown	11,700
In single graves	412
Total	12,112

Of those in single graves eighty-five are known, three being commissioned officers; the rest are unknown.

The expenditures up to July 31, 1871, amount to $13,862.77.

Recapitulation for the State of North Carolina.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Un'n soldiers.	Citizens and others.
Raleigh National Cemetery	600	533	20	6	1,159	1
New Berne National Cemetery	1,878	856	209	195	3,138	112
Wilmington National Cemetery	643	839	55	502	2,039	.....
Salisbury National Cemetery	85	12,027	.....	.....	12,112	.....
Total	3,206	14,255	284	703	18,448	113

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SOUTH CAROLINA.

FLORENCE NATIONAL CEMETERY.

Inspected May 14, 1870.

This cemetery is situated about a mile and a half southeast of the railway-station in Florence, and fronts south, on the Morris Bluff road. The lot is nearly a square, and contains four acres of level land. It is inclosed by a horizontal board-fence in poor condition. The main entrance is in the center of the south side, and from it a drive extends to the center of the opposite side. A similar drive crosses this one at right angles at the center of the lot, and extends to the centers of the east and west sides. At the intersection of these drives is a small circular mound, badly proportioned, on which stands the flag-staff.

The lodge is a new brick building, containing three rooms. It is in the southwest corner of the lot, and has a small garden for flowers and shrubs on its west end, separated from the cemetery by a light fence. There is a good well of water near the lodge. A tool-house is needed.

The graves are arranged in parallel rows in the four sections into which the lot is divided.

The Union prisoners of war were buried in trenches, and without coffins, but the burials by the United States authorities were made in single graves and with coffins. The graves have never been sodded. Sheep-sorrel is about the only thing growing in this cemetery. Bermuda grass would grow here very well, I think, and I have recommended its introduction. The graves are marked by stakes, numbered.

The interments are as follows:

	Known.	Unknown.
Commissioned officers	2	.....
Union soldiers and sailors	28	2,773
Total	30	2,773

A record of the names of about three hundred Union prisoners of war, who died and were buried here, has been found, but their graves cannot be identified. The records of the deaths among these prisoners have not been found, although great efforts have been made to recover them.

The Union prisoners of war confined at Florence were treated with decency and humanity, in striking contrast to the shameful barbarities practiced at Andersonville and Salisbury, and consequently the ratio of deaths is very small compared with the mortality at those places.

One man is employed the year round to assist the superintendent: he is paid $25 per month, and boards himself.

Many trees and shrubs have been planted, but with indifferent success.

The expenditures up to August 31, 1871, amount to $10,858.43.

MAGNOLIA CEMETERY, CHARLESTON.

Inspected May 16, 1870.

In this cemetery the Government has a small lot, near the chapel, in which are buried the remains of one hundred and twenty-four Union soldiers.

A hedge of mock-orange (*Lauro cerasus*) has been planted around it, but it is almost entirely dead, the plants being too large when set

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out. The lot was in very poor condition, overgrown with weeds, and generally neglected.

The head-boards were very shabby, and contrasted badly with the white marble slabs marking the graves of the confederate dead in a lot near by, inclosed by a handsome hedge and covered with a nicely-trimmed and fresh sod.

The remains of these Union soldiers should be transferred to a national cemetery, or else the lot in this cemetery should be kept in respectable order.

A special report was made in this case.

No expenditures by the United States.

BEAUFORT NATIONAL CEMETERY.

Inspected May 17, 1870.

This cemetery is situated about half a mile northeast of the town of Beaufort, on Port Royal Island.

The lot is a rectangle, about one-third longer than it is wide, and contains twenty-nine acres of level, sandy land. A public road runs along the west side, in the center of which is the main entrance, closed by double wooden gates. The lot is inclosed by a wooden picket-fence, in poor condition. Within the fence is a border 20 feet wide for shrubbery, and then a drive 30 feet wide surrounds the rest of the lot.

At the main entrance is a circular space, in the center of which is a small mound on which the flag-staff is planted. Four smaller mounds surround this one, on each of which is planted a large iron gun, vertically, as a monument. From this circular space several wide avenues radiate at regular intevals, through 180 degrees, and extend to the exterior drive.

The long triangular sections into which these avenues divide the grounds are divided by six circular drives, having their common center at the flag-staff mound.

These drives and avenues are covered more or less with shells, and have been prepared at great expense, though to little purpose, as probably the Government carts are the only vehicles ever within the cemetery. As they are not used, it is of course a great labor to keep them free from weeds. They were generally overgrown at the time of this inspection. I think it would be advisable to plant many of these drives and avenues, as well as the vacant sections, with live and water oaks, which grow remarkably well in this locality.

Open groves would require very little attention after they were well started, and in a few years would present a fine appearance.

The *Lauro cerasus*, called in this section mock-orange, grows spontaneously in the Carolinas; it bears clipping well, and is much used for hedges. It is better for this purpose, in this locality, than the Osage orange. It is very pretty in leaf, and quite conspicuous in flower, and grows strong and thick when properly trimmed. I recommend that a hedge be planted of it around this cemetery.

At the east end of the central avenue is a handsome granite monument.

The graves are generally arranged in parallel rows in the several sections, and are marked by head-boards, painted and lettered and more or less decayed.

Many coarse weeds were growing on the graves, as sufficient labor was not employed to keep the cemetery in proper order.

Bermuda grass should be introduced here to cover the graves. A special report has been made in this case.

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Opposite the main entrance is the lodge, a pretty wooden cottage of three rooms. It is in a small rectanglar lot, containing about two acres of land, used for vegetable gardens, &c., and is inclosed by a wooden picket-fence.

There are several wells of water within the cemetery proper.

The interments are reported as follows:

	Known.	Unknown
Commissioned officers	84	.....
White Union soldiers	3,621	.....
White Union soldiers	.....	3,35
Colored Union soldiers	795	.....
Colored Union soldiers	.....	95
Sailors	91	.....
Sailors	.....	10
Employés and citizens	78	.....
Total	4,669	4,41

The records at the cemetery were imperfect.

The bodies were removed from several places in Florida, from the vicinity of Savannah, Georgia, and from Charleston, Morris Island, Hilton Head, and other places in South Carolina.

The expenditures up to the August 31, 1871, amount to $72,190.50.

Recapitulation for the State of South Carolina.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total.	Citizens &c.
Florence National Cemetery	30	2,773	.....	.....	2,803	.....
Beaufort National Cemetery	3,796	3,462	795	950	9,003	7
Magnolia Cemetery, near Charleston	124	.....	.....	.....	124	.....
Elmwood Cemetery, near Columbia	24	.....	.....	.....	24	.....
Total	3,974	6,235	795	950	11,954	7

GEORGIA.

MARIETTA NATIONAL CEMETERY.

Inspected May 26, 1870.

This cemetery points on Cole street, a short distance east of the railway-station in Marietta.

The lot is an irregular figure of six sides, but it may be considered as almost a parallelogram, 1,600 feet long and 670 feet wide, and contains about twenty-five acres of undulating land, which was donated to the United States by Mr. H. G. Cole, a Union citizen of Marietta.

At the time of this inspection the lot was inclosed by a wooden fence in very poor condition, but since then this fence has been replaced by a stone wall.

The main entrance is near the northwest corner, from Cole street. From this entrance drives wind around and through the grounds, dividing them in numerous sections of various sizes and shapes to conform to the natural features of the land.

The lodge is near this entrance in a grove of Spanish oaks. It is built of brick, is long and narrow, containing three rooms, with projecting roof and piazza all around.

It stands on the slope of a hill, and has a kitchen in the basement. The building was in good order and seemed very comfortable.

There is a high conical hill near the center of the western half of the

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cemetery, on the summit of which stands the flag-staff, surrounded by five large iron guns, planted vertically, as monuments.

There are many fine trees on this hill, as well as in different parts of the lot.

The cemetery was not fully completed at this time, but enough had been done to show that when finished it will be one of the most picturesque of the national cemeteries.

The graves are arranged in concentric circles around the flag-staff hill, with paths radiating through the circles. In the other sections they are arranged in parallel rows, either right lines, or curving to conform to the surrounding drives. They are generally very well turfed over with Bermuda grass, and are marked by stout stakes numbered, and in good condition.

Several handsome monuments have been erected by friends; the one by the second division of the Twentieth Army Corps is particularly neat and appropriate.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	225	16
White Union soldiers and sailors	6,632	2,950
Colored Union soldiers	158	67
Citizens, &c	21	.....
Total	7,036	3,033

The bodies were removed from the national cemetery at Montgomery, Alabama, which was discontinued, and from Rome, Dalton, Atlanta, and from many other places in Georgia.

Two hands are employed the year round to assist the superintendent; they are paid $15 per month and one ration per day.

The expenditures up to August 31, 1871, amount to $187,788.17.

ANDERSONVILLE NATIONAL CEMETERY.

Inspected May 23, 1870.

This cemetery is situated about half a mile northeast of the railway-station at Anderson, on the Southwestern Georgia Railroad, and sixty miles south of Macon. The lot occupied as the cemetery is a part of the land captured by the United States with the prison-pen at this place. It is nearly square, being 1,377 feet north and south by 1,360 feet east and west, and contains a little over forty-three acres of undulating land. It is inclosed by a wooden fence, which was in very poor condition at the time of this inspection, but which has since been entirely rebuilt. The main entrance is in the center of the west side. From it an avenue 30 feet wide crosses the lot to the center of east side. A similar avenue intersects this one at the center of the lot at right angles, and extends to the center of the north and south sides, dividing the grounds into four large and equal sections. At the intersection of the avenues is a diamond-shaped plat on which stands the flag-staff.

Outside the cemetery inclosure, and just north of the main entrance, is a small lot in which a lodge and out-buildings have been recently erected, and a well has been dug just inside the main entrance.

An Osage-orange hedge has also been planted four feet inside the new fence.

There are many trees growing spontaneously in this lot, and in the southeast section there are some large southern pines, (*Pinus Australis.*)

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The avenues have been lined with live and water oaks, which do well in this locality.

Much of the ground is unoccupied, and it would be well to cover the vacant parts with open groves.

The main entrance was intended to be in the center of the south side, and a handsome drive was graded to it from the railway-station and lined with trees, but the roadway has been deeply gullied by heavy rains and is now abandoned.

The avenues in the cemetery are being provided with brick gutters to carry off the surface water and prevent washing.

The burials from the prison-pen were made in long trenches; those made by the United States were put in single graves in parallel rows. They have been generally covered with Bermuda grass, which forms a close, firm turf in the poorest sand in this hot region.

The drives and paths should also be overgrown with this grass, as it resists the action of water well.

The graves are marked by stakes, many of which are much decayed, and some have fallen down.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	13	7
White Union soldiers	12,650	92
White Union sailors	99	.....
Colored Union soldiers	16	9
Total	12,778	99

Nearly all of these interments were made from the prison-pen near by. About nine hundred bodies were removed by the United States authorities from various places in Georgia and Alabama.

There are also interred in this cemetery the remains of one hundred and eighteen rebel prisoners of war.

The prison-pen is about one mile south of the cemetery; the stockade is falling down. Several attempts have been made by unknown persons to burn up this evidence of rebel barbarity, which was a reproach upon the civilization of the age, and it is a hopeful sign that there are some people in that section who do not still glory in their shame.

Six men are employed to assist the superintendent; they are paid $15 per month and one ration per day.

Two mules, two carts, and one double wagon are also kept here for use at the cemetery.

The expenditures up to August 31, 1871, amount to $32,499.69.

Recapitulation for the State of Georgia.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Citizens, &c.	Rebel prisoners of war.
Marietta National Cemetery	*6,857	†2,966	158	67	10,048	21	.....
Andersonville National Cemetery	‡12,762	§839	16	95	13,712	.....	118
Total	19,619	3,805	174	162	23,760	21	118

* 225 commissioned officers. † 16 commissioned officers. ‡ 13 commissioned officers. § 7 commissioned officers.

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FLORIDA.

NATIONAL CEMETERY, BARRANCAS.

Inspected February 16, 1871.

This cemetery is situated near Barrancas Barracks, nine miles from Pensacola, and is the cemetery of the old marine hospital enlarged.

The lot is in the form of a rectangle, 600 feet by 513 feet, containing a little over seven acres, and is inclosed by a heavy brick wall 9 feet high, with strong buttresses every 20 feet.

The entrance is in the center of the south side, and is closed by double iron gates hung on heavy brick piers. From this entrance is an avenue 18 feet wide passing through the grounds to center of the north side. A similar avenue crosses this one at right angles, running east and west through the center of the lot. At the intersection of these avenues is a circular mound, 64 feet in diameter and 4 feet high, on which stands the flag-staff.

The avenues divide the grounds into four nearly equal sections, each of which is subdivided into six plats by paths 12 feet wide, two running east and west, and one north and south.

A drive 12 feet wide extends around the grounds just inside the wall. A portion of the drives and paths is paved with inferior bricks, and Bermuda grass allowed to grow over them, as well as over the remainder of the paths and drives. The sections on the west side of the main avenue contain the graves of Union soldiers as follows, viz:

	Known.	Unknown.	
White Union soldiers	379	271	
Colored Union soldiers	154	98	
Citizens	21	47	
Rebel soldiers	60	12	
Total	614	428	1,042
On the east side are the graves of officers and sailors of the United States Navy, as follows:			
Officers and sailors	112	225	337
Total interred in cemetery, according to records in office			1,379

The northeast section contains no graves and has never been improved, but remains covered with scrub-oak.

The graves are all leveled and covered more or less with Bermuda grass, which is growing well and will soon cover the grave-plats, walks, &c., with a good turf. Head-boards or stakes are at all the graves and are in good order.

A good many pines and oaks were left standing when the grounds were cleared, and are doing well. A few magnolias (*Grandiflora*) have been transplanted and some are living.

Cherokee rose and honeysuckle have been planted along a portion of the wall. Some other trees and shrubs have been put in by the superintendent, who takes much interest in ornamenting this place.

The acting quartermaster at the barracks has charge of this cemetery. The labor is all done by details of soldiers from the garrison. I do not think this should be done, as the garrison is small (one company) and the post large, and there is as much work to be done there as the men ought to be called upon to do.

One laborer should be hired the year round to assist the superintendent.

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The lodge is situated outside the cemetery in front of the southeast corner; is a new brick cottage containing three rooms, and having projecting roof and piazza all around; cistern attached; large yard surrounds cottage, in which are planted fruit and ornamental trees.

The expenditures up to August 31, 1871, amount to $26,777.86.

In the city cemetery near Tallahassee there are buried forty-one white Union soldiers, all known.

And in the cemetery on the military reservation at Saint Augustine there are buried eighty-two white Union soldiers; forty-two known and forty unknown.

There are also buried in the cemeteries at the military posts of Fort Taylor, Key West, and Fort Jefferson, Tortugas, white. Union soldiers as follows:

	Known.	Unknown.
Key West	128	246
Tortugas	95	19
Total	223	265

Doubtless many of these burials took place before the war of the rebellion.

Recapitulation for the State of Florida.

	White soldiers, known.	White soldiers, unknown.	Colored soldiers, known.	Colored soldiers, unknown.	Total Union soldiers.	Sailors, citizens, &c.	Rebel prisoners of war.
Barrancas National Cemetery	379	271	154	98	902	*405	72
Tallahassee City Cemetery	41				41		
Saint Augustine Military Cemetery	42	40			82		
Key West Military Cemetery	128	246			†374		
Tortugas Military Cemetery	95	19			†114		
Total	685	576	154	98	1,513	405	72

* Most of these burials were made before the rebellion. † Many of the burials were made before the rebellion.

ALABAMA.

NATIONAL CEMETERY AT MOBILE.

Inspected February 15, 1871.

This cemetery is situated about two and a half miles southwest of the post-office in Mobile, and is included within the limits of Magnolia Cemetery, belonging to the city, by whom the land was donated to the United States. The lot is an irregular figure of four sides, but nearly a rectangle of 440 by 280 feet, and contains about three acres. It is inclosed by a handsome brick wall, built last fall.

The ground is sandy and nearly level, and, to prevent the wall from being undermined by the heavy rains, brick gutters have been made at the foot of the wall on each side to carry off the surface water; and they work very well so far, only particular attention should be given to keep them clear of sand; otherwise, they would soon be useless.

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The main entrance is in the center of the south side, with a similar one opposite, both closed with iron gates.

A drive extends through the grounds from one gateway to the other, and a similar one crosses it at right angles at the center, where there is a small circular mound, thirty feet in diameter at base, ten feet high, and almost cylindrical for six or eight feet. The sides are sliding down, the slopes are so very steep. A flag-staff is on this mound.

The two drives divide the lot into four nearly equal sections, three of which contain graves.

The lodge is near the main entrance in the southeastern section; is a wooden cottage of two rooms, having a piazza all around it; cistern attached; all in good order.

There is no superintendent, and has been none since the death of the one stationed here last summer. The cemetery is under the charge of the post quartermaster, who is quartered near by, (at the barracks.) He has employed a laborer since December 15, 1870, to clear up the grounds. This man is paid $30 per month.

Two sections have been cleared of broom-sedge and look very well; the other two sections will soon be put in good order.

The graves have all been leveled and are well turfed over.

There are head-boards or stakes to all the graves.

The interments are as follows, according to the grave-marks, viz:

White Union soldiers and sailors	646
Colored Union soldiers	256
Total	902

Of these, thirty-one white soldiers and two sailors, and ninety-one colored soldiers, are reported unknown; the rest as known.

The bodies were removed from Forts Morgan and Gaines, and from Pollard, Conecuh, and other places in the State.

There are a few trees growing in the lot, and others have been ordered and will be planted out this spring.

There are no records in the office.

Should the garrison be withdrawn from Mobile a superintendent would be needed here.

The expenditures up to August 31, 1871, amount to $12,739.56.

MISSISSIPPI.

CORINTH NATIONAL CEMETERY.

Inspected June 8, 1871.

This cemetery is situated about three-fourths of a mile southeast from the railroad station. The lot is nearly a square of 933 feet as inclosed, and contains about nineteen acres, but the purchase includes twenty acres.

It is surrounded by a wooden picket-fence, in tolerably good order; the posts are somewhat decayed, and will not last more than a year or two longer. The main entrance is in the center of the south front. From it an avenue 30 feet wide extends north through the grounds, passing around a small circular plat near the north side, on which stands the flag-staff.

A drive 16 feet wide, laid out on an undulating curve, winds around

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the lot near the fence; and two drives parallel with the main avenue, one on each side and at equal distances from it, and two other drives at right angles to the main avenue, divide the grounds into twelve sections of different sizes and shapes, for burial purposes. The ground rises gently but irregularly from the south front to the flag-staff, then slopes off gently to the north.

The drainage is pretty good; a large wooden open drain is in one portion of the ground; this is still in good order.

Numerous trees have been planted on both sides of the main avenue and the drives, and are doing well.

An Osage-orange hedge was planted along the fence in February last, and is growing finely.

The lodge is a very plain and cheap wooden cottage; a new one of brick or stone is needed.

The stable and out-houses are in good order. These buildings are situated near the main entrance, east of the main avenue and south of the winding drive, which on this, the south side, is about one hundred feet inside the fence. West of the main avenue is the vegetable garden.

The graves are all leveled, but not sodded; they are partially grassed over. The grass needed cutting very much. Many weeds were growing on graves and on the drives.

No serviceable scythes were on hand. Application had been made for some.

The total number of interments is 5,667, as follows, according to the records in the office:

	Known.	Unknown.
White soldiers	1,905	3,471
Colored soldiers	....	291
Total	1,905	3,762

The bodies were removed from the places of original interments around and in the immediate vicinity of Corinth, and from Iuka, Tuscumbia, Holly Springs, Grenada, and many other places in Mississippi, Alabama, and Tennessee.

The expenditures to August 31, 1871, amount to $94,381.06.

NATIONAL CEMETERY AT NATCHEZ.

Inspected March 4, 1871.

This cemetery is situated about two miles north of the landing at Natchez, on the east side of the up-river road.

The lot is an irregular figure of four sides; that on the west side taking the curvature of the road, which follows the windings of the bluff overlooking the Mississippi; the other three sides are right lines. There are a little over eleven acres of very uneven land in the lot, and it is inclosed by a wooden picket-fence in very poor condition.

A hedge has been planted around the lot just inside the fence. The pyracanthus, a variety of the hawthorn, has been used for this hedge. It does well in this locality, growing rapidly, and when properly clipped, becoming very thick and strong. I saw several excellent hedges of it near Natchez.

If this hedge does well it may answer instead of a fence, or wall, particularly on the west side above the road, where the bank is steep and subject to slides, and no wall could be made to stand, except at great expense in putting in a foundation as deep as the bed of the road.

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The main entrance is in the southwest corner, very near the foot of the bluff on that side. An avenue, sixteen feet wide, extends from this entrance up and around and across the bluff in various directions, dividing the ground into numerous sections of different shapes and sizes. The bluff being high and rolling, immense labor has been required to cut it into its present shape.

The cemetery has been laid out with a good deal of taste, but upon entirely too expensive a plan. It is not yet completed; but when it is, a great deal of labor will be required every year to keep it in good order, for the slopes of the terraces are so steep they will slide more or less every year; and although the drives are lined on each side by the very best of brick gutters, and the walks are made of concrete, and the culverts of the finest quality of masonry, and of great capacity, yet when the great showers of summer fall they fail to carry off all the water, which rushes like a mill-race down the slopes in the most direct line, sometimes sweeping every obstacle before it.

On the summit is an oval mound, whose diameters are about 90 and 60 feet, on which stands a fine flag-staff.

A great many trees have been planted in the grounds; entirely too many should they all live, particularly in what is called the "sylvan hall."

The north side extends beyond the bluff, and there is a strip of bottom-land along it devoted to garden purposes. Near the northeast corner is a large circular plat raised a few feet above the surrounding ground, and designed as a burial section for commissioned officers; two have already been buried in it; several others are to be disenterred and re-buried there.

The lodge is under the bluff near the main entrance. It is built of brick, one story high, long and narrow, containing three rooms, and having projecting roof and piazza all around. The windows have shutters, (which ought to be allowed at all the lodges in the hot latitudes,) and the lodge seemed to be very comfortable and in excellent order. A cistern is connected with the lodge; it is covered by a lattice-work arbor. It is about thirty feet in rear of the northwest corner of the lodge. The privy is opposite the northeast corner, and is similarly covered. The tool-house is midway between these two arbors. There is more good taste displayed in this arrangement than I have seen at any other cemetery in this respect.

The graves are arranged in parallel rows in the several sections; they have been mostly leveled. A great many have fallen in by the breaking down of the coffins, and by the settling of the earth after the heavy rains. They will be filled up as soon as the ground dries sufficiently.

The graves have been marked by head-boards, which are now decayed and fallen down. I was informed that stakes had been ordered to replace them.

Bermuda grass has been introduced and planted on most of the graves; in a short time it will cover them all.

The interments are as follows, viz:

Commissioned officers	11
White Union soldiers and sailors	591
Colored Union soldiers	2,484
Total	3,086

Of these, seven commissioned officers, one hundred and seventy-four white soldiers, twenty-two sailors, and fifty colored soldiers are reported

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as known; the rest as unknown. The bodies were brought from various places in Louisiana and Mississippi within a radius of fifty miles around Natchez.

A force of twenty men and four mules and carts was employed upon this cemetery at the time of this inspection. It was thought the work would be completed in two months.

Six men would be required to assist the superintendent during the balance of the season.

The laborers are paid $35 per month, and board themselves.

The expenditures up to August 31, 1871, amount to $68,865.74.

VICKSBURGH NATIONAL CEMETERY.

Inspected March 6, 1871.

This cemetery is situated about two miles north of the city of Vicksburgh, on the west side of the Yazoo Valley road, on which it fronts about 600 yards, and from which it extends back (west) to the Mississippi River, some four hundred yards distant.

The lot is an irregular figure of many sides, and contains forty acres of very uneven land. It is inclosed by a wooden picket-fence in pretty good condition generally. A deep ravine bounds the cemetery on the south; a portion of the fence on that side being on the very edge of the ravine, was carried away by a land-slide, and has not been replaced yet. It will be difficult to make a fence or wall stand on this crest. A strong hedge will be the most suitable inclosure here.

Originally this ground was mostly a high irregular bluff, deeply cleft by gullies and ravines, running down to the bottom-land bordering the river. The summit of the bluff, which is in about the center of the lot, was leveled off into a little plateau, and then a series of terraces was made to encircle it on three sides, viz, south, west, and north. These terraces were burial sections. After the work was completed, and the interments made, the cemetery was nearly destroyed by the sliding down of a large portion of the terraces, after a long rain and snow storm. This was over two years ago. Immediately after this, a competent civil engineer, Mr. Gall, was put in charge of the cemetery to repair the damage and to prevent, if possible, a similar disaster in the future.

The first step taken was to underdrain the whole lot with tiles to carry off the subterraneous water that was constantly oozing out of the bluff; then, with gutters, pipes, and culverts, to provide conduits for the surface water. These have all been done in the very best manner. A portion of the terraces has been rebuilt with much easier slopes than before; the graves have been re-arranged in them, and planted with Bermuda-grass roots.

The work is now going on, and it is expected by Mr. Gall, the engineer, to be completed by the 1st of November next, with the force now employed, viz, 60 men, 14 mules, and 2 horses, with carts and wagons.

In these finished sections (terraces) no head-boards or stakes are used to mark the graves, but an accurate map or chart has been made, in which the position and number of each grave are carefully noted. The graves are all leveled and planted with Bermuda-grass roots, and will, probably, be well turfed over this season. Rows of trees, mostly of Spanish oaks, (*Quercus falcata*,) have been planted along the alternate rows of graves—each tree being planted at the head of a grave, and being also noted on the map.

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It is proposed to put in each section a small brick pyramid, covered with cement, or stucco, and bearing the number of graves in the section, and also indicating where the numbering begins.

The lodge is on the plateau above the terraces. It is built of brick—one story high; has three rooms, projecting roof and piazza all around. It is in good order, and is surrounded by handsome shrubs and flowers. The cistern, tool-house, &c., are neatly arranged near by. The flag-staff is in the center of a circular grass-plat a little to the south of the lodge.

A fine graveled drive twenty feet wide extends from the entrance, in the southeast corner, along the south side (quite close to the fence which overhangs the ravine) to near the river; then turns north and winds around below the terraces to the Yazoo Valley road on the east, and about one hundred and fifty yards north of the main entrance, near the lodge. A similar drive begins at this main entrance, and winding around the plateau to the southwest passes down through the terraces, and connects with the main drive near the large natural mound left in the southwest corner of the portion circumscribed by the main drive. Between this latter drive and the river the ground is quite low, and liable to be overflowed.

A large circular mound was constructed here for the burial place of soldiers of the Regular Army. It has been greatly injured by high water, but it is the intention of the engineer to repair it.

These drives and the walks are lined by excellent brick gutters; and large brick culverts connect or form outlets for them. All of this work is done in the most substantial manner, and when the cemetery is completed it will be very picturesque in appearance; but the expense will be very great, and the cost of keeping it up hereafter will be large. The site selected was in some respects very injudicious.

The interments are as follows, viz:

	Known.	Unknown.
White Union soldiers	3,482	6,953
Colored Union soldiers	147	6,004
Total	3,629	12,957

The bodies were removed from the places of original interment, as follows: From the Union lines back of Vicksburgh; from Jackson, Meridian, Grand Gulf, Chickasaw Bayou, and other places in Mississippi, Louisiana, and Arkansas.

The expenditures up to August 31, 1870, amount to $261,239.59.

Recapitulation for the State of Mississippi.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.
Corinth National Cemetery	1,905	3,474	.....	288	5,667
Natchez National Cemetery	203	399	50	2,434	3,086
Vicksburgh National Cemetery	3,482	6,953	147	6,004	16,586
Total	5,590	10,826	197	8,726	25,339

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LOUISIANA.

NATIONAL CEMETERY AT BATON ROUGE.

Inspected February 28, 1871.

This cemetery is within the corporate limits of the city, and is about one mile east of the Mississippi River, measured on Florida street, which runs along its north side. It fronts west on Dufrocq street.

The lot is a rectangle, 1,010 by 320 feet, containing about eight acres of undulating land, and is inclosed by a wooden picket-fence in good order.

The main entrance is in the center of the west side. From this entrance an avenue, thirty feet wide, passes through the lot to the center of the east side. A space, sixteen feet wide, in the center of this avenue, is covered with shells. Two small mounds are also placed in it, on which two iron guns are planted vertically on their basis as monuments.

On each side of this main avenue is a drive sixteen feet wide, running half way between it and the fence; then thirteen cross-drives, at right angles with the main avenue, divide the grounds into fifty-two squares of sixty feet each, forty-three of which are used for burial purposes.

Each of the squares, when full, contains seventy-two graves; several are only partially filled. The graves are all leveled, and some are well grassed over, but most of them have very poor turf on them; a great deal of rag-weed and other coarse kinds abound. Too much attention has been given to the walks and drives, and not enough to the grave-plats. A special report was made relative to this subject soon after this inspection.

The graves are marked by head-boards, in very good condition, generally; some are faded a good deal and a few names are scarcely legible.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	24	1
White Union soldiers	2,231	45
Colored Union soldiers	173	3
Sailors	3	....
Citizens	2	....
Total	1,433	49

The burials were from the hospitals and the battle-field near this place. Bodies were also removed from Plaquemine, Louisiana; and from Camden, Ouachita County, Arkansas.

The drainage in this cemetery is poor. From the east and west ends the ground slopes inwards very gradually, making a little valley near the center.

Formerly, a little water-course ran through this valley in wet weather. This was diverted to the east end of the cemetery by a canal, but during the heavy rains of the past winter this valley has been overflowed by the surface-water from the higher grounds outside the cemetery on the south.

A large culvert or an open drain is needed through this low part, which is now devoted to ornamental purposes, but which is too wet for cultivation.

Many trees and shrubs have been planted in this cemetery. The shrubs have not been "cut-in" properly, and have generally a loose, straggling growth.

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There is a drive around the lot, just inside the fence, except on the west side, where it is about sixty feet inside, leaving a strip of land devoted to flower and vegetable gardens, and also containing the lodge, which is a neat wooden cottage containing three rooms, with piazza all around, and shutters on the windows; all in good order. There is a cistern attached to the lodge.

An Osage-orange hedge has recently been planted around the lot, just inside the fence. The plants were starting well.

There is no flag-staff in this cemetery, but authority has been given to erect one.

Two men are employed here the year round to assist the superintendent. They are paid $40 per month, and board themselves.

The expenditures up to August 31, 1871, amounted to $26,012.43.

NATIONAL CEMETERY NEAR PORT HUDSON.

Inspected February 27, 1871.

This cemetery is about one mile east of the Mississippi River, and one and three-quarter miles southeast of the post-office of Port Hudson, and just outside of the rebel intrenchments on that side of the town. The location is bad; but it is understood that it was selected on account of its being the burial-place of the dead of General Banks's investing army.

The lot is in the form of a rectangle of 689 by 508 feet, and contains a little over eight acres of almost level land, naturally damp, and poorly drained, and is inclosed by a wooden picket-fence in good order.

The entrance is in the center of the west side, and is closed by double wooden gates, painted black. The Government road extends from this entrance to the bluff overlooking the river. This road is closed by two gates, and the superintendent reports that they are fastened at night; that the road is used by the neighbors, and cut up by heavy teams; that they will do nothing toward repairing it; and that they are unfriendly in many ways.

An avenue 30 feet wide extends from the main entrance to center of opposite side, and a drive 18 feet wide crosses the lot from center of north and south sides at right angles to main avenue. At their intersection is a small, circular mound, 18 feet in diameter, 4 feet high, on which stands the flag-staff. Two similar mounds, 15 feet in diameter, 2½ feet high, are situated in the main avenue near each end. A similar mound is at each end of the cross-drive.

Two drives, 14 feet wide, run parallel with the main avenue, one on each side, bisecting the four large sections into which the lot is divided by the avenue and cross-drive. Two mounds, 12 feet in diameter, and 2½ feet high, are in each of these drives—in center of large sections.

A drive 14 feet wide extends around the lot 6 feet inside the fence, except on west side, where a strip of 60 feet wide, containing lodge, flower-garden, &c., intervenes between it and fence.

The interments are as follows, viz:

Commissioned officers	7
White Union soldier and sailors	274
Colored Union soldiers	256
Citizens	4
Unknown and unclassified	3,262
Total	3,803

Besides those killed in the action near this place and those who died

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in the hospitals of the investing army, bodies were removed from Bayou Sara and Morganzia and buried here.

The graves are all leveled, and have either head-boards or stakes; many of the latter are badly rotted, and some have fallen down. If the stakes were driven in a few inches they might last a year or two longer.

There is no good grass in this cemetery, but grass-seed has been sown this spring. Weeds grow very thick and strong here. A great deal of time and labor has been spent in trying to keep the avenues and drives free from grass and weeds. Were the labor put upon the graves in keeping the weeds cut down, the grass would gain sufficient root to do well.

Many trees and shrubs have been transplanted during the past fall and winter—magnolias, water-oaks, holly, wild-cherry, &c. Cuttings for an Osage-orange hedge have been received and put into a bed, it being too late to plant them, no trenches having been prepared.

Objections were made to planting this hedge, on the ground that it would injure a fine row of trees along the fence, and orders have been received to postpone the work. A Cherokee-rose hedge has been planted on each side of main avenue, and along the fence on west side.

A ditch, 3 feet wide and 2 feet deep, extends all around the cemetery just outside the fence, for draining purposes, but there is no good outlet. There is a ravine about 300 yards east of the cemetery into which an outlet might be conducted that would effectually drain the cemetery; but the owner of the land is hostile, and would grant no favors except for money.

The expenditure up to August 31, 1871, amounted to $21,287.43.

NATIONAL CEMETERY AT ALEXANDRIA.

Inspected February 24, 1871.

This cemetery is situated about one mile east of the village of Pineville, on the Red River, immediately opposite Alexandria.

The lot is a rectangle, 612 by 564 feet, containing 8 acres of undulating land, and is inclosed by a wooden picket-fence in pretty good order.

The main entrance is in the center of the west side. It is surmounted by a handsome wooden arch, and closed by double wooden gates. From this entrance an avenue 24 feet wide extends through the lot to the center of the east side. A similar avenue crosses this one at right angles from the centers of the north and south sides, thus dividing the grounds into four large sections.

At the intersection of these avenues is a small circular mound 40 feet in diameter, and about 10 feet high, on which the flag-staff is planted.

An avenue 24 feet wide extends around the lot just inside the fence, except on the west side, where a strip 45 feet wide intervenes between it and the fence. This strip contains the lodge, flower-gardens, &c.

The four large sections are subdivided by paths 8 feet wide, into 16 plats each, for burial purposes.

The graves are all located in 22 of these plats. They are all leveled, and some are well turfed over; some only partially, and others quite bare.

The late heavy rains having loosened the earth, a large number of graves have fallen in, and much earth will be required to fill them up.

The drainage in this cemetery is bad, but it might be improved very much by properly grading the avenues and walks.

A special report has been made upon this subject.

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The graves are marked by head-boards or stakes, generally in very poor condition.

Two iron guns are planted vertically on their bases as monuments.

The interments are as follows, viz:

Commissioned officers, known	19
Commisssoned officers, unknown	6
White Union soldiers, known	412
White Union soldiers, unknown	616
Colored Union soldiers, known	62
Colored Union soldiers, unknown	141
Sailors, known	14
Citizens, known and unknown	12
Soldiers not classified	96
Total	1,378

The bodies were removed from Mount Pleasant, Cheneyville, Cotile Landing, Fort De Russy, Yellow Bayou, Bayou Delplase, Grand Ecore, Natchitocher, Shreveport, and other places in Louisiana; and from Jefferson and Tyler in Texas.

The lodge is situated near the main entrance. It is a neat wooden cottage of three rooms, in good order, except a leak in the roof. There is quite a pretty flower-garden in front of the lodge; and another on the opposite side of the avenue, filled with shrubbery recently received from New Orleans. There is a small cistern attached to the lodge.

Many native trees have been transplanted into this cemetery, and an Osage-orange hedge was being set out just inside the fence at the time of this inspection.

Two hands are employed to assist the superintendent; they are paid $40 per month, and board themselves.

This cemetery, considering its out-of-the-way location, looks very well, and will in time, if properly attended to, become very pretty, and without much expense.

The expenditure up to August 31, 1871, amounted to $14,969.52.

CHALMETTE NATIONAL CEMETERY.

Inspected February 14, 1871.

This cemetery is situated on the old battle-field, six or seven miles below New Orleans. It is in the form of a long, narrow rectangle, 250 feet front on the Mississippi River and 2,317 feet deep, and contains 13.6 acres of level land.

The main entrance is in the center of the river front, and a drive 16 feet wide extends from it through the whole length of the grounds. This drive is covered with shells and has a good ditch on each side, revetted with bricks set in cement. Paths 4 feet wide, parallel with and perpendicular to the drive, divide the ground into plats of about fifty feet square for burial purposes. Most of these plats contain graves, though some are vacant, and some are used for ornamental purposes. The plats that are filled contain ninety-six graves each—eight parallel rows of twelve graves each. The graves are leveled and covered more or less with Bermuda grass. A portion of the plats—perhaps one-half—is well turfed over; the remaining portion not so well, and contains many coarse weeds, particularly yellow-dock.

Head-boards, or stakes, have been placed at all the graves, but most of them are in very bad condition. Many have rotted off and fallen down.

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The stakes were never dressed or painted, and most of the head-boards are now free from paint and look badly.

The whole number of burials is 12,262, as follows:

	Known.	Unknown.
White	5,156	5,307
Colored	1,622	177
Total	6,778	5,484

The lot is inclosed by an iron fence in front and rear, and by a wooden picket-fence on the sides, in good order. An Osage-orange hedge was planted last fall just inside the fence. The mock-orange of the South (*Lauro cerasus*) would have been better in this locality, I think.

The drive is bordered on each side by a row of trees, arbor vitæ and magnolia (*Grandiflora*) alternating. Two handsome flower-gardens, one on each side of the drive and opposite each other, divide the lot into two parts. These gardens were formerly the front of the cemetery, before it was enlarged.

A flag-staff stands on a small mound near the center of the old part, the drive dividing and passing around it. Formerly there were three other similar mounds, but they have been removed, though the circular drives around them remain unchanged.

The lodge is a new brick structure containing three rooms, having projecting roof and piazza all around. There is a cistern attached to it. The privy and out-houses are arranged with better taste than usual at the cemeteries. The stable is outside of the fence, in front of the southeast corner of the cemetery.

There are some handsome ornamental plats about the lodge, and evince great care and good taste by those in charge.

Four guns are planted vertically on their bases, in handsome masonry, at equal distances along the front, a few feet inside the fence. At the opposite (west) end is a tomb, or vault, for receiving the remains of such as it may be desirable to bury elsewhere.

The drive divides and passes around this tomb.

Three laborers are employed all the time, at $40 per month. Two mules and two carts are also employed constantly.

This cemetery is visited by a great many people, and, being in an unfriendly country, great pains should be taken to keep it in excellent order. A special report was made in reference to this cemetery.

The expenditures up to August 31, 1871, amount to $158,948.97.

Recapitulation for the State of Louisiana.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Unknown and unclassified.	Total.	Citizens.
Baton Rouge National Cemetery	2,258	489	173	3	.....	2,923	[illegible]
Port Hudson National Cemetery	281	.....	.....	256	3,262	3,799	[illegible]
Alexandria National Cemetery	445	622	62	141	96	1,366	[illegible]
Chalmette National Cemetery	5,156	5,307	1,622	177	.....	12,262	.....
Fort Saint Philip National Cemetery	31	11	25	260	.....	327	.....
Total	8,171	6,429	1,882	837	3,358	20,677	[illegible]

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TEXAS.

NATIONAL CEMETERY AT SAN ANTONIO.

Inspected February 6, 1871.

This cemetery is situated about one mile east of the plaza in San Antonio, on a gentle eminence overlooking the town. The lot is nearly a square and contains two acres of level land, inclosed by a limestone wall laid in cement and covered with a heavy coping, leveled on top and projecting three inches over each side. The main entrance is in the center of the south side. It consists of a carriage-way, with a foot-way on each side; these are closed by iron gates. Similar gateways are in the center of the opposite side, but are not much used.

In the center of the lot is a small circular mound, on which stands the flag-staff. Around this mound is a circular grass-plat 120 feet in diameter. It is divided into four equal sections by paths at right angles to each other. From the main entrance a drive extends around this central plat, with branches extending to the center of each side of the lot, which is thus divided into four equal sections, besides the plat about the flag-staff mound. This is used for the burial of officers and members of their families. The remains of some of the old officers of the Army, who died in San Antonio years ago, have recently been exhumed and re-interred here; among them, Brevet Brigadier General George M. Brooke.

Most of the graves are in the two sections on the east side of the lot.

A few colored soldiers are buried in the northwest section. The southwest section contains the lodge, a small stone building, stuccoed, with very high, steep roof, in something of the Swiss cottage style.

The graves are all mounded up and well sodded, except a few recently made.

Limestone blocks, ten inches square and two feet long, are placed at most of the graves, (the top of the blocks being flush with the top of the mound,) and having the number, name, regiment, &c., of the deceased cut upon them.

This stone is very soft and easily worked. These blocks cost but little, ($3.95,) and are more durable and cheaper than wooden stakes or head-boards.

There is scarcely any earth or soil in this cemetery, it being almost entirely a soft limestone bed, and all the graves are excavated out of it.

The interments are reported as follows, viz:

	Known.	Unknown.
Commissioned officers	9	....
White Union soldiers	162	81
Colored Union soldiers	7	4
Citizens, women, and children	19	....
Total	197	85

The bodies were removed from the uninclosed city cemetery, from the Solado and Medina rivers, from Austin, Indianola, and other places in the State.

There is considerable mesquite growing spontaneously in the cemetery, and some ornamental shrubs have been set out.

A cistern has been authorized and will soon be put up, when it is expected that sufficient water will be received to use freely on the new plants and flowers during the dry season.

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A walk eight feet wide extends around the grounds just inside the wall. A hedge was ordered to be planted between this walk and the wall, but the entire absence of soil has prevented it.

There is no regularly appointed superintendent for this cemetery, but a man is hired by the Quartermaster's Department to take charge of it under the immediate direction of the post quartermaster. This man is paid $30 per month and one ration per day.

The cemetery is in fine order for the season of the year, and receives very careful attention from the officers in charge of it.

The expenditures up to August 31, 1871, amount to $14,995.15.

NATIONAL CEMETERY AT BROWNSVILLE.

Not inspected.

This cemetery is situated a short distance (200 yards) southeast of the military post of Fort Brown, Texas. It is on a little island, formed by a lagoon, formerly, doubtless, the bed of the Rio Grande River, which is about one hundred yards distant.

The grounds are reported to be laid out with considerable taste; but the drainage is poor, and considerable filling up is required.

A wooden lodge has been built for the superintendent. A flag-staff has also been erected.

A new superintendent has been assigned to this cemetery, and it is expected that it will be properly taken care of hereafter.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	19	....
White Union soldiers	515	245
Colored Union soldiers	973	950
Sailors	6	....
Citizens	19	....
Total	1,532	1,1[illegible]

The bodies were removed from Indianola, Galveston, Lavaca, Victoria, Ringgold Barracks, Loredo, Brazos Santiago, and other places in the State.

The expenditures up to August 31, 1871, amount to $22,026.61.

Recapitulation for the State of Texas.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total.	Citizens.
San Antonio National Cemetery	171	81	7	4	263	19
Brownsville National Cemetery	540	245	973	950	2,708	19
Galveston and vicinity	39	20	.....	.....	59	.....
Total	750	346	980	954	3,030	38

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ARKANSAS.

FAYETTEVILLE CEMETERY.

Inspected May 29, 1871.

This cemetery is situated about one mile southwest from the courthouse.

The lot is nearly a square of 456 feet, and contains five acres. It is inclosed by a wooden picket-fence, in pretty good condition. The grounds are on the summit of a low hill, and slope gently in all directions.

A circular drive, 15 feet wide, tangent to the center of the sides, extends around the lot, leaving spaces in the corners for gardens or shrubbery. In the center is a circular plat, 60 feet in diameter, reserved for a flag-staff, which has not yet been erected. Around this plat is an avenue 20 feet wide. On the exterior of this avenue are six long, narrow triangular plats, at equal distances from each other, having paths on each side, which unite at the vertices and then extend to the outer circular drive, giving a star shape to the plan.

The points of the rays are joined by paths in such a manner as to form diamond-shaped plats, devoted to flowers and shrubbery, between the triangles, and leaving six equal segments or sections outside, for burial purposes.

The graves are arranged in these sections in concentric rows, commencing on the exterior, along the circular drive, and are also classified by States as far as practicable.

The graves are mounded up, some of them very high, and are covered with a strong growth of clover. In the triangular plats are the graves of several officers.

The whole number of interments, according to the records at the cemetery, is 1,210, the greater portion being of unknown white soldiers. The remains were removed, in 1867, from the battle-field of Pea Ridge, and other places in the vicinity of Fayettville.

The lodge is a wooden cottage, with two rooms, and is outside of the inclosure, near the main entrance, in the center of the north side.

The ground on which it stands is not included, I understand, in the land proposed to be purchased for the cemetery. If this is the case, additional land should be obtained, and I think it would be advisable to purchase an acre on the north side of the cemetery; this would give ample room then for the lodge, well, and out-buildings, and could probably be purchased about as cheap as any smaller portion.

An Osage-orange hedge has been planted this spring around the lot, just inside the fence, and is doing well. It is planted in double rows, one foot apart in each row, and breaking joints.

A good many young trees, both deciduous and evergreen, have been set out in the cemetery, and seem to be doing well generally. The drives and paths are covered with coarse broken stone, and are not much used.

The portions of the grounds not occupied by the graves are poorly turfed over and contain many weeds.

Hands were put to cutting the grass on the day of this inspection.

I understand from the superintendent that proposals had been invited for furnishing stakes for the graves and for a flag-staff.

The expenditures up to November 20, 1870, amount to $18,434.75.

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LITTLE ROCK NATIONAL CEMETERY.

Inspected June 3, 1871.

This cemetery is situated about two miles southeast of the State-house, on the Pine Bluff road, on which it fronts east. It is a rectangular lot, containing about twelve acres, the east and west sides being a little longer than the north and south. It is inclosed by a substantial stone wall, five feet high, laid in mortar, and crowned by a coping, which is now being re-pointed with cement.

The main entrance is in the center of the east side, and is closed by double iron gates. From this entrance a drive extends around the lot just inside the wall. Another drive, leading directly toward the center, branches into several, and winds around in various directions. These drives, with connecting paths, divide the grounds into twelve sections; eleven of which are used for burial purposes; and one, near the main entrance, contains the lodge, out-buildings, and gardens. This section is separated from the rest of the cemetery by a light-picket fence.

The ground slopes gently to the east and west, but the greater portion to the west. The drainage is not good. Wooden drains or culverts were originally put in; they are more or less decayed and falling in, and they are too small and too near the surface. Some of the ground is naturally wet and boggy, and the graves were dug very shallow in consequence, probably. In one section, No. 7, just back (west) of the lodge, this is strikingly the case, where there are scarcely more than two or three inches of earth over the coffins, and when these fall in, as they do occasionally, and all will in time, the remains are exposed.

This section needs to be under-drained with tiles, and the graves, 568 in number, then carefully mounded up and sodded over.

There are a good many small trees growing spontaneously in this cemetery, and some have been planted along the drives. Grass is growing pretty well in most of the sections. It has been cut in but one section yet, and that is being cured for hay.

The whole number of interments, according to the records in the office, is 5,439, as follows:

	Known.	Unknown.
White soldiers	2,724	1,953
Colored soldiers	438	324
Total	3,162	2,277

About thirty officers are buried in a small circular section, near the flag-staff mound, in the northwestern portion of the grounds.

The lodge is a new brick building, containing three rooms, with projecting roof and piazza all round. A cistern is connected with the lodge but will not hold water, which has to be hauled from the arsenal a mile distant. The cistern should be repaired.

One man is hired the year round to assist the superintendent; he is paid $25 per month. One additional man allowed for May, June, and July. This is not sufficient help to keep the cemetery in first-rate order.

The expenditures up to August 31, 1871, amount to $42,356.86.

FORT SMITH NATIONAL CEMETERY.

Inspected June 1, 1871.

This cemetery is situated on the military reserve of old Fort Smith and is but a very short distance from the village of that name. It is

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the old post cemetery enlarged. On the west it is bounded by the river Ponto, and fronts on the east on the "Choctaw Line Road." This east front is divided into three nearly equal parts, the central one being parallel with the west side. This gives six sides to the lot, which embraces about five and a half acres, and is inclosed by a wooden picket-fence in tolerably good order.

The lodge, a new stone building containing three rooms in good order, is situated outside the cemetery, opposite the central part of the east face, and is inclosed by a light wooden picket-fence. It has been proposed to extend the north and south sides of the cemetery sufficiently to embrace the lodge, out-buildings, and garden. The post of Fort Smith is soon to be abandoned and the land sold, except what will be required for the cemetery. It is respectfully suggested that sufficient land be exempted from sale to give the cemetery lot the regular figure indicated above.

A permanent wall will be required here as soon as funds can be obtained for that purpose, and should, of course, surround all the ground retained.

The grounds within the cemetery are quite undulating, and contain many large handsome forest trees, growing spontaneously; also many small trees and shrubs planted within a year or two, and doing well.

The lot is divided by drives and paths into nine sections for burial purposes, leaving the portion embraced by the lines of the east front without any graves.

There being many steep slopes in this cemetery there is a rapid flow of water during heavy rains, and bad gullying frequently follows. This has been the case this season, I was told, and much work has been done lately in repairing the damages and providing remedies for similar occurrences. Wooden culverts were originally put in; these were too small, and are perishing and falling in. Wide, shallow, open gutters, well paved, would be better than culverts here.

The main entrance is in the east front near the central portion; two guns, iron 24-pounders, are planted near by as monuments, one on each side of the gateway.

There is no flag-staff in this cemetery. The one at the post, if it is worth moving, had better be planted on the little natural mound just south of the main entrance. If this flag-staff is not suitable, then a new one should be obtained.

An Osage-orange hedge has been planted around the lot just inside the fence.

The graves are mostly mounded up and pretty well grassed over; a few have been carefully sodded this spring. They are all marked by stakes, which are old and rotten, but will soon be replaced by new ones already procured. The interments, according to the records of the cemetery, are as follows, viz:

	Known.	Unknown.
Commissioned officers	20	3
White Union soldiers	477	933
Colored Union soldiers	68	3
Total	565	939

There are also interred in this cemetery the remains of 125 rebel soldiers, (17 known,) and 162 women, children, and others not of the miliiary service.

The portion of the grounds appertaining to the post cemetery has been n use since 1832, and most of the burials have been from the garrison, and previous to the war of the rebellion.

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Four hands are employed at present. One man is required all the time to assist the superintendent, who is a one-armed man.

The expenditures up to August 31, 1871, amount to $12,275.17.

Recapitulation for the State of Arkansas.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Citizens, &c.	Rebel prisoners of war.
Fayetteville National Cemetery	456*	754†	.....	.....	1,210	6	.....
Little Rock National Cemetery	2,724*	1,953‡	438	324	5,439	.....	.....
Fort Smith National Cemetery	497§	936‖	68	3	1,504	162	15
Total	3,677	3,643	506	327	8,153	168	15

* Commissioned officers, 26. † Commissioned officers, 2. ‡ Commissioned officers, 6. § Commissioned officers, 20. ‖ Commissioned officers, 3.

TENNESSEE.

MEMPHIS NATIONAL CEMETERY.

Inspected June 6, 1871.

This cemetery is about seven miles northeast from Memphis, on the Louisville and Memphis Railroad, on which it fronts east. The lot is nearly a rectangle, 881 feet wide north and south, and averaging about 1,800 feet in length east and west, the east front being irregular, to conform to the line of the railroad, and contains about 36 acres of nearly level land; a large portion of which is covered by a grove of large oak trees.

A wooden picket-fence, in pretty good order, surrounds the lot; the main entrance is in the center of east side. The lodge and other buildings are near this entrance.

An avenue 30 feet wide extends through the center of the grounds, east and west, passing around a small mound near lodge, on which the flag-staff stands, and also around a large circular plat in the center of the lot. A similar avenue intersects this one at right angles, at the central circle, thus dividing the lot into four large sections. A drive 25 feet wide extends around all these sections, except the northwestern one, just inside the fence. These sections are subdivided by paths into numerous rectangular burial-lots of different sizes, and in these lots the graves are arranged in parallel rows, and are classified according to States as far as practicable.

In the large central circle the graves are arranged in concentric circles; the dead of the Regular Army and of the Navy (186) are buried there. The graves are all leveled, and more or less grassed over, and are marked by stakes numbered.

The whole number of interments is 13,966, as follows:

	Known.	Unknown.
White soldiers and sailors	4,852	4,852
Colored soldiers	250	3,959
Employés	45	8
Total	5,147	8,819

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The bodies were removed from the original burial-places of those who died in the camps or hospitals in and around Memphis, and from Island No. 10 and Fort Pillow; and from numerous places on the Memphis and Charleston and Memphis and Louisville Railroads; and from both banks of the Mississippi River, from Hickman, in Kentucky, to Helena, Arkansas.

The grounds were very flat, and were liable to be covered with water during heavy rains or a rainy season, and, in order to carry off the surface water, extensive open drains have been made.

The main drain has its outlet near the southeast corner, just south of the lodge. It is over 1,700 feet long, and varies in depth from 5 to 9 feet to give the necessary fall, and is from 6 to 9 feet in width, and is revetted with bricks. This drain is in good order. The lateral drains are very numerous, and have an aggregate length of about 27,600 feet. These are mostly revetted with wood, and will soon need repairing.

The lodge is a wooden cottage of three rooms, with a kitchen detached, and is in good order. There are also a small house for employés, a stable, tool-house, &c. Water is supplied from a cistern.

There are five iron guns—four planted vertically in masonry as monuments, and one mounted on blocks horizontally.

An Osage-orange hedge has been planted around the lot this spring, just inside the fence; the cuttings have not started very well.

Four hands are employed constantly; they receive $30 per month.

Two mules and one cart are kept here also.

The cemetery is kept in good order.

The expenditures up to August 31, 1871, amount to $204,449.41.

SHILOH NATIONAL CEMETERY.

Inspected June 9, 1871.

This cemetery is situated on the west bank of the Tennessee River, immediately below Pittsburgh Landing, which it overlooks. It is about five miles below Hamburgh, and twenty-one miles northeast from Corinth.

The lot is an irregular figure of six sides, containing about nine acres, and is inclosed by a very heavy stone-wall laid in cement and covered by a good coping. The east side along the river is very steep, and has been cut into a terrace at the top, with a drive at the foot of its slope. This drive is sustained by logs, which have decayed a good deal, and, if not replaced by something better, will soon give way, and much damage may follow. On the north side, also, some revetting was made of logs, as well as a bridge over a ravine, and these are much decayed. I understand that a civil engineer, Mr. Gall, now in charge of the Vicksburgh Cemetery, has recently examined this work, and recommended a plan for removing these logs, which has been adopted.

A drive is laid out along the wall on the north, east, and west sides, but is very little used. The west end is curved, and the main entrance is in its center; an avenue extends from it due east to the terrace overlooking the river, passing around a small square mound reserved for a monument, should one be erected. At the east end of the avenue is the flag-staff, surrounded by a semicircular plat in which are the graves of those of the color-guards who fell in the battle of Shiloh.

A path runs north and south along the upper (west) edge of the terrace, in which are many graves arranged in regimental groups. Three concentric circles of graves surround the square mound. The rest of the lot is divided into small sections, by several paths; and these sec-

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tions are filled, generally, with graves of soldiers belonging to the same regiments or States.

The grounds contain many fine large trees, mostly oaks; and many others have been transplanted. An Osage-orange hedge was planted last spring along the wall.

The graves have all been leveled; grass is growing over them pretty well. The graves are marked by stakes, painted and numbered.

The graves number 3,586, viz:

	Known.	Unknown
White soldiers	1,227	2,358
Colored soldiers	-----	1
Total	1,227	2,359

The walks and drives are macadamized. Three guns are planted vertically as monuments, one near main entrance, and one on each side of square mound.

One sea-coast howitzer and one boat-howitzer, mounted on carriages, much decayed, are placed near the flag-staff. The latter ought to be planted on the square mound if no monument is built.

The lodge, garden, and out-buildings are on the west of the cemetery, outside the wall, and are inclosed by a wooden picket-fence.

The lodge is a wooden cottage of three rooms, kitchen attached, in very good order, but a new one will be required soon.

Three men are employed here the year round, at $30 per month.

The stables and out-buildings are in good condition.

Two mules and two carts are kept here for public use.

The expenditures up to August 31, 1871, amounted to $107,275.40.

CHATTANOOGA NATIONAL CEMETERY.

Inspected December 1, 1870.

This cemetery is situated a little over a mile southeast of the town of Chattanooga, and near the Western and Atlantic Railroad.

The ground consists of a round hill one mile in circumference, rising almost uniformly with a moderate slope to the height of about 80 feet above the surrounding valley. It is directly in front of Missionary Ridge, perhaps two miles distant, and was used as the headquarters of General Grant during a portion of the memorable battle of Lookout Mountain.

A very heavy stone wall, with coping set in cement, incloses the hill. The main entrance is on the side toward the town. From it a wide drive winds around the base of the hill, at varying distances from the inside of the wall, and another leads directly to the summit of the hill, which is crowned by a circular grass-plat 400 feet in diameter. In the center of this plat is the flag-staff, and four large iron guns are planted vertically as monuments along its circumference, at ninety degrees from each other.

An avenue 30 feet wide surrounds this circle. Two other avenues wind around the hill between the summit and the base, and are connected by cross-drives and walks, which divide the surface into numerous sections; eighteen of which are used for burial purposes. These take up about one half of the land inclosed, which is about 75 acres.

These drives and avenues are macadamized, and lined with stone gutters, giving a good drainage for the surface-water.

There are a large number of small oaks and hickories growing spontaneously; in some portions of the lot they are too thick, and should be

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thinned out gradually. Other trees, including many cedars, have been transplanted from time to time, and are growing pretty well. A trench for an Osage-orange hedge has been prepared just inside the wall.

Some of the views from the hill are quite grand, and the cemetery itself will be very picturesque when the trees attain greater proportions.

The graves are nearly all leveled and sodded; a good many have fallen in and require filling up.

The graves are marked by stakes, numbered; over 2,000 new ones have been put up this fall.

The old head-boards are preserved in a small building near by, outside the cemetery.

The lodge is also outside the cemetery, near the main entrance. It is a small wooden cottage, in good order. There is a well of good water near it. The lot about the lodge is inclosed by a wooden picket-fence and contains about two acres, for garden purposes, very poorly cultivated.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	192	7
White Union soldiers	7,618	4,162
Colored Union soldiers	861	20
Employés	14	.....
Total	8,685	4,189

During the past year two bodies have been exhumed and delivered to friends, and two removed from place of original burial and interred in the cemetery; and during the same time eleven soldiers of the garrison (near by) have been buried here.

The bodies were removed from the battle-fields of Chattanooga, Chickamauga, Resaca, and from numerous other places in Georgia, Alabama, and Tennessee.

Four men are employed the year round to assist the superintendent; they are paid $25 per month and one ration per day.

One mule and cart are kept here also.

The expenditures up to August 31, 1871, amount to $93,846.30.

KNOXVILLE NATIONAL CEMETERY.

Inspected December 2, 1870.

This cemetery is situated about one mile northeast of the Railroad Hotel in Knoxville, and fronts (west) on the Kentucky Railroad.

The lot is a parallelogram about 760 feet long and 580 feet wide, and contains ten acres. It is inclosed by a five-bar fence, in poor condition; boards much decayed, though the posts are pretty good. On the west front there is a wooden picket-fence.

The cemetery proper is in the eastern part of the lot, and is a square of about 580 feet. The strip left on the west side is separated from it by a partition fence. In this strip are the lodge, stable, garden, &c.

In the center of the cemetery is a small circular mound, 30 feet in diameter and 4 feet high, on which is erected the flag-staff. A drive surrounds this mound, with branches leading to the center of each of the four sides of the square, thus dividing it into four equal sections.

The graves are arranged in circles, concentric with the drive around the mound. There are thirteen of these circular rows of graves, which are separated from each other by paths 10 feet wide, except the middle one, which is 15 feet wide, and was intended as a drive. An

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avenue, 18 feet wide, sweeps around the outer circle of graves. The drives are all in good order. The walks are grassed over and closely trimmed.

The main entrance is in the center of the west side, from the road running alongside the Kentucky Railroad.

From this entrance an avenue leads to the gateway in the center of the partition fence, and there joins the circular avenue above mentioned.

The lodge, a small wooden cottage, in poor condition, is near the outer entrance.

A trench has just been prepared for an Osage-orange hedge, to be planted in the spring just inside the fence.

The graves are mounded up and very well sodded, and the turf neatly trimmed. They are marked by head-boards, painted and lettered, and by stakes, numbered. Some fifty-odd marble slabs have been erected by friends.

Besides the graves in the circles there are a few on each side of the inner entrance on the west side. These are arranged in a single row, parallel with the fence.

A large iron gun is planted as a monument on each side of this entrance.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	25	....
White Union soldiers	1,965	1,007
Colored Union soldiers	73	68
Employés	15	....
Total	2,078	1,075

The bodies were removed from Cumberland Gap, Tazewell, Concord, and many other places in Tennessee, Kentucky, Virginia, and North Carolina.

The expenditures up to August 31, 1871, amount to $18,310.28.

STONE RIVER NATIONAL CEMETERY.

Inspected November 30, 1870.

This cemetery is situated on a portion of the Stone River battle-field, about three miles northeast of the town of Murfreesborough, and lies between the Nashville and Chattanooga Railroad and the Nashville turnpike, the former bounding it on the east, the latter on the west.

There are about twenty acres in the lot, which is in the form of a trapezoid, about 600 feet wide at the south and 800 at the north end, and about 1,250 long on the west side.

About five acres on the north end are separately inclosed, and contain the lodge, stable, tool-house, and gardens. The balance of the lot forms the cemetery proper and was the original purchase. This ground is inclosed by a wooden picket-fence, except that a portion of the west side is covered by a very heavy stone wall.

During the past season the whole of the Government land has been inclosed by a stone wall; coping not yet (December, 1871) put on.

The main entrance is in the center of the west side, from the Nashville pike. From this entrance a drive, 30 feet wide, extends around the lot, a few feet inside the fence. A trench for an Osage-orange hedge was being prepared between this drive and the fence.

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Near the center of the grounds, on a natural elevation, is a square grass-plat about 100 feet on each side, on which stands the flag-staff; and also two large iron guns planted vertically as monuments. An avenue 30 feet wide extends around this square, and from the center of each of its sides and from its four angles similar avenues, but of different width, extend to the opposite sides and corners in right lines. Drives parallel with three sides of the lot intersect these avenues, dividing the grounds into twenty sections of different sizes and shapes, fifteen of which are used for burial purposes.

The graves are arranged in parallel rows; are mounded up and sodded; but at the time of this inspection the work of leveling them had not been commenced.

The graves are marked by head-boards, painted and lettered.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	48	4
White Union soldiers	3,702	2,198
Colored Union soldiers	85	102
Total	3,835	2,304

The bodies were brought from the battle-field adjoining, from the burying-grounds around Murfreesborough, wherein were buried the dead from the general hospitals near that place, and from Readyville, McMinnville, Shelbyville, and from many other places within a radius of sixty miles, including Franklin and Spring Hill. Dead from 17 States are buried here.

About 300 yards south of this cemetery is a small square lot inclosed by a heavy stone wall, in which are buried fifty-six men of Hazen's brigade, who fell in the battle of Stone River. Marble slabs are placed at the head of each grave, with appropriate inscriptions, and in the center of the lot is a handsome stone monument dedicated to their memory and noble deeds.

This work originated with and its expense was borne by that gallant brigade.

Six men were employed to assist the superintendent at the time of this inspection. Two men are so employed the year round. They are paid $30 per month and board themselves. A mule and cart are also employed here. The lodge is a wooden cottage of three rooms in good order. The gardens and grounds about the lodge are large, and afford the superintendent many advantages.

The expenditures up to August 31, 1871, amount to $19,426.67.

NASHVILLE NATIONAL CEMETERY.

Inspected November 29, 1870.

This cemetery is situated six miles north of Nashville, on the Gallatin turnpike, and one mile south of Madison Station, on the Louisville and Nashville Railroad, which runs through the cemetery.

The lot is nearly square, and contains about 64 acres of undulating land.

During the past year it has been inclosed by a stone wall. (December, 1871.)

The main entrance is near the center of the east side from the Gallatin pike. From this entrance several avenues wind around and through the grounds, dividing them into numerous sections, or plats, of different shapes and sizes, for burial or ornamental purposes.

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The ground on the south is rather high and slopes off gently toward the northeast.

The railroad runs through the lot north and south, dividing it into two nearly equal parts.

The eastern part is open ground; the western is covered with an open grove of large oaks.

The flag-staff is planted near the railway, in the south end of the east part. A circular plat near it has been reserved for the site of a monument should one be erected. A new wooden lodge has been erected near the main entrance. The superintendent preferred to live in the old one in the northwest portion of the ground, and had obtained permission to do so.

The stables and out-buildings are near the old lodge, which is still a comfortable cottage, very pleasantly situated.

There are five iron guns planted vertically as monuments in different parts of the grounds. A small watercourse enters the cemetery near the northwest corner, runs southeasterly till it reaches about the center of the lot, then inclines to the northeast and passes out a little north of the main entrance. The bed of this stream is maintained by stone walls.

There is also another little streamlet running from the south side in a northeasterly direction, and passing out of the cemetery a little south of the main entrance. The two streams receive the surface water of the lot and answer for open drains.

The graves are arranged generally in rows, or curves, parallel with the avenues surrounding the respective sections. They are mostly leveled and pretty well covered with turf, though the grass is poor.

The graves are generally marked by stakes, painted and numbered, but some head-boards remain standing yet, and friends of the deceased have erected a good many marble slabs.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	38	....
White Union soldiers	10,300	3,509
Colored Union soldiers	1,447	463
Employés	703	29
Total	12,488	4,001

The bodies were removed from the burial-grounds around Nashville, wherein were buried the dead from the general hospitals in that city; and from the battle-fields in that vicinity and at Franklin; and from Gallatin, Bowling Green, Cave City, and numerous other localities in Kentucky and Tennessee.

Five laborers are employed to assist the superintendent; they are paid $30 per month, and board themselves.

Two mules and two carts and a wagon are furnished this cemetery.

At the time of this inspection a trench was being prepared for an Osage-orange hedge, to be planted just inside the fence.

The expenditures up to August 31, 1871, amount to $72,048.05.

FORT DONELSON NATIONAL CEMETERY.

Inspected June 14, 1871.

This cemetery is situated about one mile below the landing, at the little town of Dover, on the left bank of the Tennessee River.

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General L. Thomas in his report says: "It occupies the site of a redoubt erected by the Union troops some time subsequent to the capture of Fort Donelson. This would have been an interesting feature, and within the work very many of the dead could have been interred; but, unfortunately, an inexperienced officer was in charge, who not only leveled it with the ground, but also, at great expense, cut off seven feet of the apex of the hill, thus entirely marring its beauty. The ground was very rough and broken, especially on the river side, where the descent was very abrupt and cut up with deep gullies. Heavy sustaining walls of stone had to be built on the slope to protect the burial portion."

The ground owned by the Government is an irregular figure of four sides, as follows:

North side, 525; west, 1,097; south, 670; and east, 1,115 feet; and contains 15¾ acres. This is inclosed by a wooden picket-fence, in good order; but the portion occupied as the cemetery proper embraces only about three acres on the north end, a bold eminence commanding a fine view of the river above and below.

This portion is inclosed by a dry stone-wall, built of large blocks of split limestone, and covered with a heavy coping set in cement.

The Eddyville road passes along the south side of the large lot, and a macadamized road leads from it through the Government grounds, on the east side, to the entrance of the cemetery proper. This entrance is closed by double iron gates across the carriage-way, hung on two iron guns, with smaller guns for the posts of the side gates; the effect is quite pretty.

A drive extends around the cemetery near the wall. and other drives wind through it, dividing it into several sections, of different sizes and shapes, for burial purposes.

A large circular plat surrounds the flag-staff, which is a very fine one; and a smaller plat surrounds the iron gun, planted as a monument on the summit of the hill.

The graves are mounded up, but not sodded, very little grass growing on them, as the soil was all taken off in grading. Top-dressing with manure is needed.

Whole number of interments six hundred and seventy, viz:

	Known.	Unknown.
White soldiers	153	503
Colored soldiers	4	8
Employés	1	18
Total	158	512

The bodies were removed from the battle-ground of Fort Donelson and vicinity, and from Clarksville, and other places near by.

A good many trees have been transplanted into this cemetery. The pines seem to be doing well, but the oaks have mostly died.

The lodge is near the main entrance, inside the stone wall. It is a wooden cottage, one story high, with three rooms, and kitchen detached; kept very neat, and looks comfortable; said to leak a little, and to be very cold in winter. The position is very much exposed to the winds. A new lodge, of brick or stone, should be built in a year or two. A small cistern is connected with the lodge; is too small; does not hold water enough in summer.

One man employed the year round at $30 per month. Two mules and a cart kept here also in public service.

This cemetery is in good order. The superintendent is much inter-

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ested in its improvement, and is very zealous, industrious, and intelligent in his management of it.

The expenditures up to August 31, 1871, amounted to $53,200.78.

Recapitulation for the State of Tennessee.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Employés, known.	Employés, unknown.	Total
Memphis National Cemetery	*4,852	†4,852	250	3,959	45	8	13,966
Shiloh National Cemetery	‡1,227	§2,358		1			3,586
Chattanooga National Cemetery	7,810	4,169	861	20	14		12,874
Knoxville National Cemetery	1,991	1,007	73	68	15		3,153
Stone River National Cemetery	3,750	2,202	85	102			6,139
Nashville National Cemetery	10,338	3,509	1,447	463	703	29	16,489
Fort Donelson National Cemetery	153	503	4	8	1	1	670
Total	30,120	18,600	2,720	4,621	778	38	56,877

* Commissioned officers, 28.
‡ Commissioned officers, 27.
† Commissioned officers, 5.
§ Commissioned officers, 3.

KENTUCKY.

CAMP NELSON NATIONAL CEMETERY.

Inspected November 18, 1870.

This cemetery is about six miles from Nicholasville, (in Jessamine County,) near the turnpike leading from that place to Danville, and is within the intrenchments called Camp Nelson, formed to defend the crossing of the Kentucky river. It is on the summit of a high hill, commanding fine views; has an irregular outline of seven sides; and embraces about seven acres of uneven land, inclosed by a substantial stone wall 4 feet high, 2 feet wide at top, with heavy coping set in cement. The lot is divided by graveled or macadamized drives and walks into eight sections, seven being used for burial purposes, and the remaining one containing the lodge, stables, &c.

The graves are arranged in parallel rows; are all leveled, but are not well covered with turf, the soil being poor.

There are head-boards, or stakes, at all the graves, but many are in bad order.

I did not see the records in the office, as the superintendent happened to be absent at the time of this inspection; but the graves are reported to number 3,638, as follows, viz:

Known white soldiers	1,494
Known colored soldiers	867
Unknown white soldiers	1,184
Unknown colored soldiers	5
Employés known	88
Total	3,638

The original interments from the troops and employés at Camp Nelson were 1,615.

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The balance of the bodies were removed from the battle-field of Perryville, (975,) and from Frankfort, Covington, Harrodsburg, Richmond, Camp Dick Robinson, and other places in the State.

Three iron guns, (24-pounders,) planted vertically on their bases in stone blocks, are placed as monuments in different parts of the grounds. They were rather rusty.

There is a very fine flag-staff in the northeastern portion of the grounds. There is very little shrubbery in this cemetery. Some native forest-trees are required, as the position is quite exposed to winds, and is bleak and cold in winter.

The lodge is a wooden cottage and seemed to be in good order. It is situated near the main entrance in the south side.

From this entrance there is a roadway to the turnpike about half a mile distant. This roadway belongs to the United States, but it is not inclosed. I was informed that none of the land had yet been paid for.

One man is hired to assist the superintendent, at $30 per month. One mule and cart are also employed here the year round.

The expenditures amount to $36,467, up to August 31, 1871.

LEBANON NATIONAL CEMETERY.

Inspected November 25, 1870.

This cemetery is situated about 1½ miles southwest of the town, near the Lebanon and Campbellsville Turnpike, from which it is approached by a lane.

The lot is a triangle, with two sides about equal and nearly perpendicular to each other, and contains nearly two acres, inclosed by a massive wall built of large blocks of split limestone, laid up dry, and covered by a heavy coping set in cement.

The entrance is at the intersection of the perpendicular sides, and is closed by iron gates.

A drive, 12 feet wide, extends from this entrance around the lot ten feet inside the wall. The border between the drive and wall is covered with turf, and contains a row of trees, cedars and maples alternating.

Three avenues, 12 feet wide, cross the lot parallel with the three sides respectively, dividing the ground into seven sections of different sizes and shapes.

The central section is covered by a triangular pyramid, on which the flag-staff is planted.

The square section at the entrance is divided diagonally by a drive into two plats, on each of which is a small triangular mound surmounted by an iron gun, planted vertically on its base as a monument.

The three large sections along the three sides of the lot are reduced in size somewhat by paths, six feet wide, cutting off small triangular spaces for flower-beds and shrubbery.

There are five sections devoted to burial purposes.

The graves are arranged in parallel rows; they are all mounded up and well sodded, and the grass neatly trimmed. They are marked by numbered stakes, which are badly rotted; new ones were being prepared.

The interments are as follows, viz:

	Known.	Unknown.
White Union soldiers	582	281
Employés	2	....
Total	584	281

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The names of all are known, but the bodies reported "unknown" could not be identified.

Soldiers representing eleven States are buried here.

On the north of the cemetery proper, and outside the wall, is a narrow strip of land, belonging to the Government. It extends the whole length of that side, and embraces about one-half of an acre, making the whole of the Government purchase two and three-eighths acres. In this addition, and near the entrance to the cemetery, is the lodge, a wooden cottage of three rooms, in good order. The stable and outbuilding are also in this strip, which is inclosed by a wooden picket fence on three sides.

One man is employed ten months in the year to assist the superintendent; he is paid $25 per month, and boards himself.

The expenditures up to August 31, 1871, amount to $16,172.

MILL SPRINGS NATIONAL CEMETERY.

Inspected November 22, 1870.

This cemetery is situated at Logan's Cross-Roads, in Pulaski County, nine miles from Somerset, and occupies a portion of the Mill Springs battle-field.

The land was donated to the United States by Mr. W. H. Logan. It is in the form of a parallelogram, about three times as long as wide, and contains three acres.

The cemetery proper is in the east half of this lot, and is inclosed by a substantial wall, built of large blocks of split limestone, laid up dry and covered with a heavy coping set in cement.

This lot, as inclosed, has six sides; the north side being divided into three equal faces by the cutting off of the northeast and northwest corners. The entrance is in the center of the south wall, from the road leading from Somerset to Columbia. From this entrance, an avenue, 16 feet wide, extends due north to a square in the center of the lot, on which stands the flag-staff. The avenue passes entirely around this square, which is 48 feet to the side.

An avenue crosses the lot parallel to the south front from the centers of the east and west sides of the square; and from the center of its north side a path, 6 feet wide, runs to the center of the north side of the lot, thus dividing the cemetery into four large sections. The two sections on the south side are each subdivided by a path, 6 feet wide, running north and south, making in all six sections for burial purposes.

A drive extends around these sections a few feet inside the wall.

The graves are arranged in parallel rows in the several sections. They are mounded up, but not sodded. Some are grassed over, but most are not. Grass-seed has been sown, but has not taken well. The soil is poor; a top-dressing of manure is required, but that cannot be obtained readily in this out-of-the-way-place.

There are quite a number of small cedars and sugar-maples growing in this lot, also a few rose-bushes.

The interments are as follows, viz:

	Known.	Unknown
Commissioned officers	5	...
White Union soldiers	314	356
Colored Union soldiers	20	11
Employés	2	...
Total	341	367

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The bodies were removed from the battle-field of Mill Springs, from Monticello, Columbia, Greasy Creek, and many other places within a radius of forty miles. The names of over two hundred of the "unknown" are known, although the bodies could not be identified. There are representatives from eleven States buried here.

The lodge, stable, and gardens are outside the cemetery wall, and occupy the western half of the Government land; this portion is inclosed by a wooden fence. The lodge is a wooden cottage of three rooms in good order, and seems quite comfortable. A cistern is attached to it, but would not hold water, which had to be hauled some distance.

One man is employed the year round to assist the superintendent, (who is a one-armed man;) he is paid $30 per month, and boards himself.

A mule and cart are supplied here also.

The expenditures up to August 31, 1871, amount to $17,091.54.

THE LEXINGTON CEMETERY.

Inspected November 17, 1870.

Is situated on the Frankfort turnpike, about one mile from the city. The soldiers' lot is on the south side of the cemetery, along this pike, and is bounded on the north by a main avenue, which sweeps by with considerable of a curve.

The lot is an irregular figure of four sides, (two curved,) about 100 yards long, and 16 wide at one end, and 60 at the other, and contains a little over three-quarters of an acre.

Near the center of the lot is a small circle, about 40 feet in diameter, in the center of which is an iron gun, (24-pounder,) planted vertically on its base as a monument, and surrounded by four small piles of cannon-balls. The rest of this circle is in grass, well trimmed, and is surrounded by a graveled walk, with branches extending to the avenue on the north and to the south side of the lot. The graves are arranged about this circle in concentric arcs; 19 on the east and 15 on the west side.

The graves are mounded up and sodded, and well trimmed, and most of them have head and foot boards, in bad condition. A few graves are marked by stakes and by marble slabs.

These graves are numbered consecutively, from 20 to 948, number 20 being the first grave in the first arc, about the central circle; but numbers 1 to 19, inclusive, do not appear. This would make the number of graves 929, which does not agree with the published report of the Quartermaster General, in which 948 interments are reported. This lot is kept in order by the Cemetery Association, without expense to the United States. There are some few trees in this lot, and more immediately surround it.

This is a very pretty cemetery, and is kept in fine order.

The burials in the soldiers' lot were mostly from the general hospital established in Lexington; but bodies were removed from Paris, Cynthiana, Mount Sterling, and Falmouth.

The expenditures up to January 31, 1869, amount to $16,811.74.

DANVILLE CEMETERY.

Inspected November 19, 1870.

In the northwest corner of this cemetery there is a lot belonging to the United States. It is in the form of a rectangle, and is about 80 by

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120 feet. At each of the four corners is a dressed limestone post, with the letters U. S. cut on upper face.

This lot is divided into six sections by three paths, two running north and south, one east and west. In five of these sections are buried the remains of Union soldiers, as follows:

	Graves.
Number 1	37
Number 2	61
Number 3	81
Number 4	104
Number 5	65
Total	358

Most of these graves are of known white soldiers, who died in the hospitals in Danville.

The graves are mounded up and well sodded. The grass has been cut this season, but broom-sedge and weeds abound now. Hogs have been lately rooting over this part of the cemetery; probably got in by accident.

Quite a large number of marble slabs have been erected by friends. Numbered stakes have been placed at the balance of the graves, and are in good order; only one is missing.

There is one section in this lot containing the graves of several citizens, but none of soldiers; apparently it does not belong to the United States. It is understood that the Cemetery Association takes charge of this lot without expense to the Government.

The expenditures amount to $18,843, up to January 31, 1869.

CAVE HILL CEMETERY, NEAR LOUISVILLE.

Inspected November 14, 1870.

This cemetery is about three miles from center of city, at the upper end of Broadway.

The Government has two lots in it. One, donated by the Cemetery Association, is situated in the northeastern portion of the grounds, on the summit of a small hill, forming an oval plateau nearly level, whose diameters are about 280 feet and 90 feet respectively, and is entirely surrounded by a wide graveled drive called Cypress avenue. The other lot is near this one, Cypress avenue separating the east end of the former from the north end of the latter. It was purchased by the United States and extends from Maple avenue on the south, following its curves, to the northern and western boundaries of the cemetery.

It is divided into three burial sections, each being a small rolling hill with gentle slopes, and between the eastern section and the other two is a little valley in which is a miniature lake fed by springs.

In the first lot the graves are arranged in rows parallel with the short diameter of the figure. In the second they are in rows parallel with the curvatures of Maple avenue. The graves are mostly well mounded up, and sodded, but some are fallen in. The grass has been neatly trimmed. A few marble slabs have been erected by friends; most of the other graves have stakes painted and numbered, though some are without any marks, and some of the stakes are rotted off and fallen down.

There are some rose-bushes in the first lot, but no other shrubbery. It is, however, surrounded by other lots containing very handsome trees, mostly evergreens, and costly monuments. A few ornamental shrubs would be very appropriate in this lot.

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At the north end an iron gun is planted as a monument.

The eastern section in the second lot is filled with young and vigorous pines, Austrian, Scotch, and white; and spruces, Norway and hemlock, and the effect is very pretty. The other two sections have no trees or shrubs to speak of. The grass is kept neatly cut in these sections and between them. Ten dollars per month is paid for keeping the grounds in order, but this does not include the expense of filling up sunken graves, or replacing grave-marks, stakes, or head-boards.

The burials number 3,904—mostly from the camps and hospitals about Louisville—though about 900 bodies were removed from various points in the State along the Louisville and Nashville Railroad.

The interments are classified as follows, viz:

	Known.	Unknown.
White Union soldiers and citizens	3,341	406
Colored Union soldiers	.....	157
Total	3,341	563

Just east of the lot donated by the Cemetery Association to the United States is another lot, containing the graves of confederate soldiers. These graves were marked by wooden head-boards, now mostly rotten and fallen down. Not much care seemed to have been given to them this year.

The expenditures up to March 31, 1869, amount to $47,505.

Recapitulation for the State of Kentucky.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Citizens.	Total.
Camp Nelson National Cemetery	1,494	1,184	867	5	88	3,638
Lebanon National Cemetery	582	281	.....	.....	2	865
Mill Springs National Cemetery	319	356	20	11	2	708
Lexington National Cemetery	762	101	53	4	9	929
Danville National Cemetery	346	8	.....	.....	1	355
Cave Hill National Cemetery	3,317	405	.....	157	25	3,904
Total	6,820	2,335	940	177	127	10,399

OHIO.

GREEN LAWN CEMETERY, COLUMBUS.

Inspected June 16, 1870.

The soldiers' lot is in a conspicuous part of this cemetery. It is on a low natural mound, graded into a very gentle and uniform slope. On its summit is a circular space sixteen feet in diameter, reserved for the site of a monument.

The graves are arranged in concentric circles (seven) around this central or monument plat, and the exterior row of graves is surrounded by an avenue ten feet wide. A path, six feet wide, extends from this avenue through the rows of graves to the central space. The graves are all sodded and the grass neatly trimmed. They are marked by head-

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boards, painted and lettered, but badly decayed. The rows of graves are separated by paths four feet wide.

The lot was purchased by the State of Ohio, and is kept in order by the cemetery authorities.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	1	..
White Union soldiers	473	6
Colored Union soldiers	12	..
Total	486	6

The expenditures up to August 31, 1871, amount to $14,971.20.

Near Camp Chase, (which is about five miles from Columbus,) there is a rectangular lot, 630 by 170 feet, inclosed by a substantial close board-fence, in which are buried 2,131 rebel prisoners of war who died at Camp Chase.

The graves are mostly covered with grass, and nearly all are marked by strong head-boards, numbered.

The expenditures up to August 31, 1871, amount to $581.55.

SPRING GROVE CEMETERY, NEAR CINCINNATI.

Inspected June 17, 1870.

The soldiers' lot in this beautiful cemetery was donated to the United States by the State of Ohio. It is finely situated and is surrounded by handsome and costly monuments, as well as by lovely scenery. The lot contains three sections, each consisting of a gently sloping circular mound. On the summit of each mound is an iron 32-pounder, planted vertically on its base, and surrounded by a little rustic stone-work. The latter is falling away, disintegrating. If it were covered with ivy it would look better. These guns do not make handsome monuments here, where the surroundings are so rich and elegant. Were an 8-inch shot or shell placed on the muzzle of each the effect would be improved.

The sections are lettered A, B, and C. Under each of these guns is buried a general or field officer. In section "A," General Robert McCook; "B," Colonel F. Jones; "C," General T. J. Williams.

The graves are arranged in each section in concentric circles around the apex of the mound. They are all well sodded, and the grass neatly trimmed. The graves are marked by wooden pegs, numbered on top, and driven in flush with the surface of the ground.

The interments are reported as follows, viz:

	Known.	Unknown.
Commissioned officers	19	..
White Union soldiers	945	..
White Union soldiers	...	28
Colored Union soldiers	2	..
Total	966	28

The number of graves is 932.

A portion of these bodies (339) were removed from Camp Dennison, where they were originally buried; the balance were buried from the hospitals in and near Cincinnati.

A very handsome marble monument, surmounted by a life-size statue

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of a sentinel on guard, has been erected near this lot by patriotic citizens of the State, at a cost of $25,000.

The expenditures up to April 30, 1870, amount to $6,345.50.

WOODLAND CEMETERY, CLEVELAND.

Inspected September 20, 1870.

The soldiers' lot is situated near the middle of the west side of this cemetery. It is a rectangle, 40 by 16 feet, and contains two rows of graves, eighteen in the front (west) and nine in the second row, parallel to the first. The graves are all mounded up and well sodded, and the grass neatly trimmed. This is attended to by the Cemetery Association.

One grave is marked by a marble slab; the rest by little flags placed over them on Decoration Day.

There are sixteen Union soldiers buried in a lot belonging to the city of Cleveland, and situated near the main entrance. Eleven of these graves are marked by head-boards, and one has a marble slab.

There are also buried in this cemetery, among their friends, 102 Union soldiers. Most of these have died since the war. The remains of some few have been brought from the South.

The records of all these burials are with the superintendent of the cemetery.

Several handsome monuments have been erected to the memory of distinguished officers.

The Twenty-third Ohio Infantry has an appropriate monument, with inscriptions giving the mortuary history of the regiment during the war.

The expenditures up to August 31, 1871, amount to $433.12.

CEMETERY AT GALLIPOLIS.

Not inspected.

This is the town cemetery, and there is a soldiers' lot in it, but the land has not been conveyed to the United States.

The interments are reported as follows, viz:

	Known.	Unknown.
White Union soldiers	76	..
Colored Union soldiers	4	77
Citizen	1	..
Total	81	77

The expenditures by the United States are reported to be $1,232.75.

In the Oakwood Cemetery, at Sandusky, there are buried eleven Union soldiers, (all known;) and in the Roman Catholic Cemetery at Cleveland, three commissioned officers and nine Union soldiers (all known) are reported as buried.

The remains of two hundred and six rebel prisoners of war are interred on Johnson's Island.

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Recapitulation for the State of Ohio.

	White, known.	White, unknown.	Colored, known.	Total.	Citizen.	Rebels.
Green Lawn Cemetery, Columbus	474	6	12	492	....	.....
Camp Chase, Columbus	.....	.....	.....	.....	....	2,131
Spring Grove Cemetery, Cincinnati	964	28	2	994	....	.....
Woodland Cemetery, Cleveland	145	.....	.....	145	....	.....
Roman Catholic Cemetery, Cleveland	12	.....	.....	12	....	.....
Gallipolis Cemetery	76	77	4	157	1	.....
Oakwood Cemetery, Sandusky	11	.....	.....	11	....	.....
Johnson's Island	.....	.....	.....	.....	....	206
Total	1,682	111	18	1,811	1	2,337

INDIANA.

CROWN HILL CEMETERY, INDIANAPOLIS.

Inspected June 18, 1870.

This is a new cemetery, very handsomely laid out, and beautifully located. The soldiers' lot is situated in a very conspicuous part, on the western half of a gently-sloping hill. A drive passes along the base of the hill the whole length of the circumference of the Government lot. On the summit of the hill is a circular plat 40 feet in diameter, in the center of which stands a flag-staff. The graves are arranged in parallel rows up and down the hill. They are well-sodded and marked by head-boards, painted and lettered. A few marble slabs have been erected by friends. A good many trees have been planted along the drives, and some few among the graves. At the foot of the hill, or slope, where the drives along the base unite with a main avenue, there are two iron guns planted vertically on their bases as monuments.

The land—about one acre—was purchased by the United States, at a cost of $5,000, and the cemetery authorities keep the lot in order.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officer	1	..
White Union soldiers	641	36
Colored Union soldiers	30	..
Total	672	36

The bodies were removed from the Green Lawn Cemetery, in the city of Indianapolis, where they were originally buried from the general hospitals in that place. The remains of 1,556 rebel prisoners of war still remain buried in the Green Lawn Cemetery.

The expenditures up to August 31, 1871, amount to $12,127.

NEW ALBANY NATIONAL CEMETERY.

Inspected November 15, 1870.

This cemetery is situated about one and one-half miles northeast of the town of New Albany. The lot is a rectangle 675 by 371 feet, and

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contains nearly 5½ acres of level land. It is inclosed by a very substantial, dry stone wall, built of large blocks of split stone, breaking joints, and covered by a heavy coping of dressed limestone set in cement.

The main entrance is in the center of the south side; from it an avenue extends through the grounds to the center of the opposite side, passing around three grass-plats, the center one being much larger than the other two. The flag-staff is planted on the one nearest the main entrance. A path, perpendicular to the main avenue, extends from the central grass-plat to the centers of the east and west sides, thus dividing the lot into four large sections for burial purposes, although a strip is reserved from the sections on the south side for the lodge, out-buildings and gardens.

An Osage-orange hedge has been planted just inside the wall, and many evergreens have been planted and successfully cultivated in the large central circle and in the front sections. The blending of the Scotch, Austrian, and white pines with the Norway and hemlock spruces and the arbor vitæ is very pretty and evinces a cultivated taste in the arrangement.

The graves are arranged in parallel rows in the four sections. They are mounded up and well-sodded, and the grass neatly trimmed. They are marked by head-boards, painted and lettered, or by stakes numbered.

The interments are as follows, viz:

	Known.	Unknown.
White Union soldiers	1,341	490
Colored Union soldiers	757	208
Employés	11	....
Total	2,109	698

The bodies were removed from the places of original burial in West Virginia, Virginia, Kentucky, and Indiana. Most of the deaths were in the hospitals established near those places. The colored soldiers are buried in a section by themselves.

The lodge is near the main entrance. A new one, of brick, has been erected since this inspection. There is a well of good water (with pump) in the center of the large grass-plat. One man is employed the year round to assist the superintendent. He is paid $30 per month.

The expenditures up to June 30, 1871, amount to $21,197.86.

OAK HILL CEMETERY, EVANSVILLE.

Not inspected.

This is an incorporated cemetery, in which the United States have purchased a lot for $300. The graves are reported to be well arranged, neatly sodded, and marked by head-boards, painted and lettered.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	1	..
White Union soldiers	554	8
Colored Union soldiers	33	..
Total	588	8

The burials were from the general hospital at Evansville.

There are also 340 white Union soldiers (all known) reported to be

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buried in various (92) local cemeteries throughout the State. These have been interred by their relatives and friends.

Recapitulation for the State of Indiana.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total.	Citizens.	Rebels.
Crown Hill Cemetery, Indianapolis	642	36	30	.....	708	.....	.....
Green Lawn Cemetery, Indianapolis	.....	.....	.....	.....	.....	.....	1,55
New Albany National Cemetery	1,341	490	757	208	2,796	11	.....
Oak Hill Cemetery, Evansville	555	8	33	.....	596	.....	.....
Other places	340	.....	.....	.....	340	.....	.....
Total	2,878	534	820	208	4,440	11	1,55

ILLINOIS.

MOUND CITY NATIONAL CEMETERY.

Inspected June 12, 1871.

This cemetery is situated about one mile northwest from the navy-yard at Mound City. The lot is a rectangle, 825 feet by 528 feet, and contains 10 acres of almost dead-level land.

It is completely surrounded by a strong dike, to keep the back-water from the Ohio, in time of floods, from overflowing it.

The surface-water is carried off through a sluice-gate in northeast corner, which is closed during seasons of high water in the river.

This dike is well grassed over, and has a close, firm turf on the top and sides. At the foot of the exterior slope is a wooden picket-fence in good order. An Osage-orange hedge has been planted the past spring, on top of the dike, and is growing finely.

The "junction road" passes by the southwest face, and there are two entrances over the dike from this road, about 175 yards apart, and each being about 50 yards from the nearest end of that face. From each of these entrances a drive extends into the cemetery, perpendicularly to the "junction road," for about three-fourths of the depth of the cemetery, where they are intersected by a drive parallel to the road, thus giving a drive through the grounds from one entrance to the other. The drive parallel to the road passes around a small circular plat, on which stands a very poor flag-staff, small and crooked.

Four iron guns are planted along this latter drive as monuments; two on each side of flag-staff.

This cemetery is surrounded by woods, and some large trees were left standing when the grounds were used for burial purposes. Many small trees, maples and elm, have been transplanted during the past winter, and they seem to be doing well; but the evergreens—spruces, cedars, &c.—are not likely to live.

The graves are arranged in parallel rows; are all leveled and grassed over, but bearing, also, many coarse weeds, particularly yellow-dock.

The graves are marked by stakes, painted and numbered. New stakes have recently replaced the old and rotten ones.

The whole number of interments is 4,868, viz:

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	Known.	Unknown.
White soldiers and sailors	2,060	2,460
Colored soldiers and sailors	307	....
Rebel prisoners of war	....	41
Total	2,367	2,501

Of these, 1,644 were original interments from the general hospitals in Mound City, and which, it is understood, determined the selection of this place for a national cemetery.

The remaining bodies were removed from Cairo, Belmont, Paducah, Columbus, Kentucky, and other places.

The lodge is in the southeast corner; is a one-story brick building, containing three rooms; has projecting roof and piazza all round, in railroad-station style; water supplied from cistern. A tool-house is needed.

Vegetable garden and ornamental shrubbery about lodge.

One man hired by the day, at $1.75. Two extra hands employed about one month.

The expenditures up to August 31, 1871, amount to $53,944.96.

CAMP BUTLER NATIONAL CEMETERY.

Inspected June 23, 1870.

This cemetery is situated about six miles east of Springfield, Illinois, near a way-station on the Toledo, Wabash and Western Railroad.

The lot is nearly a square, and contains a little over six acres of slightly undulating land. It was inclosed by a wooden picket-fence, which has since been replaced by a brick wall, and an Osage-orange hedge planted along the inside.

The main entrance is in the center of the east side, from a county road. During the past year a neat brick lodge has been erected near this entrance.

A light picket-fence running north and south through the lot divides it into two nearly equal parts. The eastern part contains the graves of the Union dead, and is considered the cemetery proper. It is open prairie land, with a few large oaks scattered over it. These trees are dying at the top. By judicious trimming-in they may be made to reproduce handsome heads; but if neglected will soon be entirely dead.

The burials were made from the hospitals at Camp Butler as the deaths occurred, and do not seem to have been made according to any regular plan or order; but the graves were dug as most convenient. While these graves were mounded up this disorder and confusion were apparent, but since they have been leveled doubtless these features are less striking.

The western portion of the grounds contains the confederate, or rebel, dead. A fine grove of young, vigorous oaks covers this portion, and as the ground undulates considerably the effect is pleasing to the eye. Were the partition fence removed the appearance of the front, or Union, lot would be much improved.

The graves in both lots are marked by stakes or head-boards. Some few marble slabs have been erected in each lot by friends. These slabs are often as frail and perishable as the head-boards, and perhaps more so, they break so easily. Broken ones were seen here.

The interments are as follows, viz:

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	Known.	Unknown.
White Union soldiers	549	165
Total		714
Rebel prisoners of war		645
Total		1,359

The expenditures up to August 31, 1871, amount to $15,250.83.

ROSE HILL CEMETERY.

Inspected June 25, 1870.

This cemetery is situated seven miles north of the city of Chicago.

The Union dead are buried in several lots, donated to the United States by the Cemetery Association. Several very handsome monuments have been erected in or near these lots, viz:

I. The national monument, of granite, surmounted by figure of soldier holding Union flag. (Cost, $20,000.)

II. Bridge's Battery monument, of white marble, surrounded by ten captured cannon planted vertically.

III. Taylor's Battery monument, also surrounded by cannon.

IV. Board of Trade Battery monument.

V. Monument to Colonel Wyman.

The interments are as follows, viz:

	Known.	Unknown.
Commissioned officers	5	2
White Union soldiers	297	13
Total	302	15

The burials were principally from the general hospital near the city, but some bodies were brought from the South.

The graves are all leveled and well sodded, and the grass neatly trimmed.

The Cemetery Association takes care of these lots without charge.

The expenditures up to December 31, 1869, amount to $3,546.

In the Graceland Cemetery, five miles north of Chicago, there are about one hundred Union soldiers buried in private lots by friends.

In the Oakwood Cemetery, six miles south of Chicago, are buried the remains of 12 Union soldiers, who died of small-pox at Camp Douglas.

There are also buried in the Government lot in this cemetery the remains of 4,039 rebels, prisoners of war.

The expenditures up to December 31, 1869, amount to $13,772.

WOODLAND CEMETERY, QUINCY.

Inspected June 21, 1870.

The soldiers' lot is situated on the north side of this cemetery, on the summit of a ridge overlooking the city of Quincy and the surrounding country.

The lot is in the form of a rectangle, about 150 by 200 feet. It is nearly level, and contains several very fine oak trees. It is not inclosed, but the north boundary fence of the cemetery passes by it, and an Osage-orange hedge has been planted along the inside. This lot was

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donated to the United States by Ex Governor Wood, of Quincy, who has taken great interest in the proper burial of Union soldiers.

Since my inspection the lot has been inclosed by a dressed-stone curbing and put in very complete order.

The graves are arranged in parallel rows, are all leveled and well sodded, and are marked by head-boards, painted and lettered.

The interments are as follows, viz:

White Union soldiers, known	209
White Union soldiers, unknown	6
Colored Union soldiers, known	27
Total	242

The burials were from the general hospital in the city of Quincy.

There are no records of these interments at the cemetery, and no one connected with it knows anything about them.

The citizens of Adams County have erected in another part of this cemetery a handsome and costly marble monument in memory of their gallant soldiers who fell during the war, but none of whose remains are buried here.

The expenditures up to May 31, 1871, amounted to $1,266.25.

ROCK ISLAND NATIONAL CEMETERY.

Inspected June 28, 1870.

This cemetery is situated near the upper end of the island. The lot is nearly square and contains about one acre, and is inclosed by a light wooden picket-fence.

The graves are arranged in parallel rows; are all leveled; some few have sunken in and need filling up. All are grassed over, but the turf is not very good. The graves are marked by head-boards, painted and lettered.

There are a few fine large trees within the inclosure.

There is no superintendent at this cemetery, the post quartermaster has charge of it, consequently there is no lodge.

According to the records at the post the interments number 306.

General Thomas reported them as follows:

White Union soldiers, known	226
White Union soldiers, unknown	9
Colored Union soldiers, known	54
Women and children	6
Total	295

The burials were from the general hospital at Davenport, Iowa, and from the prison-guard on Rock Island.

In another part of the island is a lot containing the remains of one thousand nine hundred and twenty-eight rebel prisoners of war, fifteen of whom are unknown.

The expenditures up to August 31, 1871, amount to $4,272.42.

In the City Cemetery, near Alton, there is a soldiers' lot owned by the Government, in which are buried one hundred and sixty-three white Union soldiers, twelve being unknown, the rest known.

In the Prisoners' Cemetery, two and a half miles north of the city hall in Alton, there are buried thirteen hundred and four rebel prisoners of war.

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Official report has been made of the burial in other local cemeteries in this State of seventy white Union soldiers, all known.

Recapitulation for the State of Illinois.

	White, known.	White, unknown.	Colored, known.	Citizens.	Total.	Rebel prisoners of war.
Mound City National Cemetery	2,060	2,460	307	.....	4,827	6
Camp Butler National Cemetery	549	165	.....	.....	714	66
Rose Hill Cemetery, Chicago	302	15	.....	.....	317	.....
Graceland Cemetery, Chicago	100	.....	.....	.....	100	.....
Oakwood Cemetery, Chicago	12	.....	.....	.....	12	4,69
Woodland Cemetery, Quincy	209	6	27	.....	242	.....
Rock Island National Cemetery	226	9	54	6	295	1,98
Alton City Cemetery	151	12	.....	.....	163	1,39
Other places	70	.....	.....	.....	70	.....
Total	3,679	2,667	388	6	6,749	1,57

MISSOURI.

NATIONAL CEMETERY AT JEFFERSON BARRACKS.

Inspected November 3, 1870.

This cemetery is situated on the military reserve of Jefferson Barracks, a little south of the post, which is on the Mississippi River, ten miles below Saint Louis, Missouri.

The lot is a quadrangle about 1,200 feet long and 734 feet wide, and contains a little over twenty acres. It is inclosed by a wooden picket fence, recently whitewashed.

The grounds embrace the summit of an undulating ridge, running nearly perpendicularly to the river and having gently-sloping sides. A drive sixteen feet wide extends around the lot just inside the fence. Similar drives cross it at right angles to each other, dividing it into several large sections, which are subdivided into many smaller ones of similar form by paths ten feet wide. These drives and paths are covered with coarse broken stone, and, being but little used, are very uncomfortable to drive or walk over.

The old post cemetery is included in this cemetery, and occupies the eastern end. There is a fine grove of large trees in this end; some of them are decaying; but if their tops were cut in properly they would probably recover their former vigor and beauty, and last for a generation longer.

The records in the office show the number of burials to be as follows:

White Union soldiers, known	6,6[illegible]
White Union soldiers, unknown	[illegible]
Colored Union soldiers, known	[illegible]
Colored Union soldiers, unknown	1,044
In old post cemetery:	
Mostly unknown	[illegible]
Rebel prisoners of war	1,01[illegible]
Others, not of military service	[illegible]
Total	10,[illegible]

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The Union soldiers are buried in sections by States, so far as known.

The graves are all well sodded and neatly trimmed. Originally they were all mounded up, but several sections have lately been leveled.

The graves are marked by head-boards, the greater portion of which are in a poor condition.

There is a flag-staff in the center of the lot, placed on a small circular mound. Eight guns are planted vertically, as monuments, in different parts of the grounds; they are well painted.

During the present season the superintendent has had 234 days' work, at $1.75, furnished him; and four hands are now employed leveling graves, &c. The superintendent, having but one arm, needs one assistant all the time.

The approach to the cemetery from the post is not good, the road being both circuitous and in bad condition. I recommend the opening of a road direct to the cemetery from the main road.

The main entrance is in the center of the north side; near it, inside the fence, is the new brick lodge, containing three large rooms; the old lodge is near by, and is now used as an office; both are in good order.

In rear of these buildings are two deep depressions in the ground, similar to the "sink-holes" in limestone formations, each having in its bottom a small pond; one has been enlarged and surrounded by a stone wall, making a miniature lake; the other is in its natural state. The ponds have subterranean communications with each other and with the Mississippi, and are affected by the rise and fall of water in that river, but are never dry.

These grounds possess much natural beauty, and when the projected improvements are completed will be very attractive.

I recommend that a dry stone wall be substituted for the wooden fence. Excellent stone can be obtained very near.

As the grounds are to be ornamented with a large number of trees, I do not think a hedge by the wall, or fence, either necessary or desirable.

The expenditures up to August 31, 1871, amount to $142,287.46.

NATIONAL CEMETERY, JEFFERSON CITY.

Inspected November 5, 1870.

This cemetery is situated about one mile east of the State-house, and near the State-prison.

The lot is nearly a rectangle of about 190 feet east and west by 440 north and south, and is inclosed by a wooden picket-fence in poor condition. A stone wall is needed here; stone can be obtained from quarries very near the cemetery.

The entrance is in the center of the north end, and from it a wide path descends through the lot to the center of the south end, toward which the ground slopes considerably. The upper portion, say two-thirds, is divided into eight small sections for burial purposes, by cross-walks 6 feet wide. The remainder of the ground is devoted to garden purposes, excepting the southeast corner, which is marshy and cannot be cultivated until drained.

An Osage-orange hedge separates the gardens from the burial sections, and also lines the inside of the fence above the gardens.

The graves are arranged in parallel rows in the several sections. They are all leveled and sodded, and the grass well trimmed. They are

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mostly marked by head-boards, old, faded, and rotten. A few marble slabs have been erected by friends.

The flag-staff is planted in the central walk near the center of the lot.

Two guns are also planted vertically as monuments.

The lodge is near the main entrance. It is a small wooden cottage in good order; a cistern is attached; the supply of water is sufficient.

The interments are as follows, viz:

White Union soldiers, known	331
White Union soldiers, unknown	313
Citizens and rebel soldiers	9
Total	653

The bodies were removed from Boonville, Sedalia, Brunswick, and other places in the State.

No labor has been hired this year or last, the prison authorities having sent convicts to help the superintendent whenever he asked for assistance.

The expenditures up to August 31, 1871, amount to $11,577.15.

NATIONAL CEMETERY, SPRINGFIELD.

Inspected May 26, 1871.

This cemetery is situated about five miles southeast of the railway-station, and three miles from "Old Springfield."

The lot is nearly square and contains five acres of level prairie land, inclosed by a wooden picket-fence in good condition. Two years ago an Osage-orange hedge was planted just inside the fence and is doing well.

The main entrance is in the center of the north side, and is closed by double wooden gates. A drive 24 feet wide extends from this entrance around the lot, a few feet inside the hedge. Similar drives cross the lot at right angles to each other, from the center of the four sides, dividing the grounds into four equal sections. At the intersection of these drives is an artificial mound 80 feet in diameter at the base, and 15 feet high, and cut into three terraces. On this mound the flag-staff has recently been planted.

Originally there was a similar mound, 40 feet in diameter and 10 feet high, in the center of each of the four sections, with paths 10 feet wide surrounding it, and extending to the centers of the sides of the sections, and also diagonally to the four corners; thus dividing the sections into eight blocks each, excepting the northwest section, which has only one-half divided in this manner; the other half containing the lodge, tool-house, and garden.

This arrangement gave twenty-eight blocks, as they were called, for burial purposes, and twenty-seven of them contain graves.

The lodge is near the main entrance; it is a small wooden cottage containing three rooms, and is in good condition.

There are a few trees and shrubs growing well in the grounds.

A very worthless superintendent was in charge last year, and the cemetery was sadly neglected. This year it has been put in good order. A very large number of the graves had fallen in; much earth was required to fill them up, and the four mounds in the four sections were leveled for this purpose, and the spaces they occupied converted into grass-plats, as well as the diagonal walks or paths.

The graves have been sown with blue-grass seed, which has come up

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well, and, as the soil is good, probably a fine turf will be obtained by another season.

The graves are arranged in parallel rows in the several blocks; they are all leveled and are marked by head-boards, painted and lettered and in good order. The interments are as follows, viz:

	Known.	Unknown.
White Union soldiers	832	689

The remains of one known and five unknown Union soldiers have been removed this season from Urbana and Springfield, and buried in this cemetery. Most of the other bodies were removed from the battle-field of Wilson's Creek, and from the numerous other places in South-western Missouri where fighting took place.

Much work has been done this season, and very well done, too. Eight men and three teams have been employed nearly two months; laborers paid $1.75, and teams $3 per day.

The expenditures up to August 31, 1871, amounted to $35,677.39.

Near the railway-station at Centralia are buried the remains of 87 known Union soldiers, members of the Twenty-ninth Missouri Volunteer Infantry, who were killed in the action near this place on the 27th of September, 1864.

The bodies were buried, without coffins, in a large trench sunk a few feet below the surface, and covered by a mound of earth three feet high, and well sodded.

A small stone monument, bearing an appropriate inscription, has been erected near the mound to the memory of these brave men.

The lot is inclosed by a substantial board fence. The North Missouri Railroad Company has agreed to keep the place in good order, free from expense to the United States.

Recapitulation for the State of Missouri.

	White, known.	White, unknown.	Colored, known.	Colored, unknown.	Total Union soldiers.	Citizens.	Rebel prisoners of war.
Jefferson Barracks National Cemetery	6,693	*1,569	23	1,044	9,329	556	1,010
Jefferson City National Cemetery	331	313	.....	.....	644	6	3
Springfield National Cemetery	832	689	.....	.....	1,521	.....	.....
Centralia National Cemetery	87	.....	.....	.....	87	.....	.....
Total	7,943	2,571	23	1,044	11,581	562	1,013

*726 in old post cemetery probably died before the war.

KANSAS.

FORT LEAVENWORTH NATIONAL CEMETERY.

Inspected November 7, 1870.

This cemetery is situated on the military reserve at Fort Leavenworth, and is the old post cemetery enlarged.

The lot is nearly a square, being 484 by 500 feet, and is inclosed by a wooden picket-fence in pretty good condition. The entrance is in the center of the north side, and from it an avenue 16 feet wide extends to

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center of opposite side; a similar avenue crosses this one at right angles from the centers of the east and west sides. A drive ten feet wide surrounds the lot just inside the fence. All of the drives are covered with broken stone. They have no gutters and the drainage is bad.

The grounds are divided into four large sections by the two avenues named. The two sections on the west side are covered with a dense growth of young trees, so thick that the grass is kept out almost entirely; they should be thinned out to let in the sun.

The lodge is outside the cemetery, near the main entrance. It is a small wooden cottage in pretty good order, and has a cistern attached to it; the supply of water is ample.

A semicircular recess of about 40 feet radius is in the center of the east, west, and south sides; the latter is intended for the location of a flag staff; in each of the other recesses an iron gun is planted vertically as a monument.

The graves are generally arranged in parallel rows in the four sections. They are all leveled, and those in the open grounds are grassed over.

The interments are as follows, viz:

White Union soldiers, known	354
White Union soldiers, unknown	731
Citizens, women, and children, known	179
Total	1,263

Many of these deceased soldiers belonged to the garrison in former years.

Bodies were removed from cemeteries in Saint Joseph, Kansas City, Independence, and Weston, Missouri; also from the cemetery on the arsenal grounds at Fort Leavenworth.

The expenditures up to August 31, 1871, amount to $15,115.59.

FORT SCOTT NATIONAL CEMETERY.

Inspected November 8, 1870.

This cemetery is situated in the open prairie, about 1½ miles south of the town of Fort Scott, and some 400 yards east of the Fort Scott and Missouri Railroad. There is no road to the cemetery, but it can be approached readily from the railroad.

The lot is nearly a square of 600 feet, and contains something over eight acres. It is inclosed by a post and-rail fence in good order. It is not laid out according to any perceptible plan, and the burials have been made in different parts of the lot, without much regard to order.

A portion of the ground seems to have been an old cemetery, and contains the graves of women and children, as well as adult males not soldiers; and another portion contains graves of officers and soldiers of the old Army as far back as 1851. The lot is well covered with grass, which has been neatly cut this season. A few trees have been planted along the inside of the fence, but they are not doing well. I learned that oaks, chestnuts, and black-walnuts were being successfully and extensively grown from the seed in this part of Kansas. I would recommend the trial in this cemetery.

There is no lodge or flag-staff here; I did not see the superintendent; I heard he lived in town, but could not find him.

There are about 500 graves in the cemetery; they are generally mounded up and sodded, and the grass well trimmed. Most of the

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graves have head-boards in very poor condition. Some few are marked by rough stones, without any names or numbers on them, stuck slightly in the ground.

The interments are reported as follows, viz:

Commissioned officers, known	2
Union soldiers, known	304
Union soldiers, unknown	101
Total Union soldiers	407
Rebel soldiers	14
Total	421

The expenditures up to August 31, 1871, amount to $664.84.

The citizens of Baxter Springs having conveyed to the United States the title to a lot in the cemetery near that place, there have been buried in it 124 Union soldiers, all known, and mostly citizens of Kansas, belonging to the body-guard and band of General Blunt, who were killed by the rebel Quantrell's gang.

The expenditures by the United States in making the interments are reported as being $1,255.80.

The Cemetery Association has agreed to keep the lot in good order.

Besides the interments in the cemeteries at the military posts, (which are mostly of regulars who have died since the rebellion closed,) there are buried in various local cemeteries throughout the State 139 Union soldiers—113 being known, and 26 unknown.

Recapitulation for the State of Kansas.

	Known.	Unknown.	Citizens.	Total.	Rebel soldiers.
Fort Leavenworth National Cemetery	354	731	178	1,963	.....
Fort Scott National Cemetery	306	101	.....	407	14
Baxter Springs	124	.....	.....	124	.....
Other places	113	26	.....	139	.....
Total	897	858	178	1,933	14

MICHIGAN.

ELMWOOD CEMETERY, DETROIT.

Inspected September 21, 1870.

The soldiers' lot is situated near the center of this cemetery, a little west of the chapel. One of the main drives passes by it on a gentle curve.

An oval grass-plat, containing two flower-beds, borders on this drive, and then the graves are arranged in five parallel rows, and number seventy-four. They are mounded up and well sodded. The grass was neatly trimmed in the spring, and the drought has prevented its subsequent growth. There are seven marble slabs, and eleven head-boards, but six of the latter have no legible marks.

There are several handsome young trees growing in and around this lot.

Of the interments, sixty-two white Union soldiers (all known) were from the general hospital in Detroit; the remaining twelve have been made since the war.

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The expenditures up to August 31, 1871, amount to $360.

There are also reported to be buried in other places in the State:

Union soldiers, (white,) known	78
Union soldiers, (white,) unknown	41
Total	119

Of these, 66 are buried in the cemeteries near Grand Rapids, 30 in the City Cemetery at Jackson, and 23 in Post Cemetery at Fort Wayne.

Recapitulation for the State of Michigan.

	Known.	Unknown.	Total.
Elmwood Cemetery	62	12	74
Grand Rapids Cemetery	28	38	66
Jackson Cemetery	27	3	30
Fort Wayne Cemetery	23	.....	23
Total	140	53	193

WISCONSIN.

In the Forest Home Episcopal Cemetery, near Milwaukee, there is a soldiers' lot, in which are buried 24 Union soldiers, all known. These burials were from the general hospital in the city.

There are also buried in this cemetery, in private lots, 41 Union soldiers, all known, 13 being commissioned officers.

The expenditures up to August 31, 1871, amount to $63.

In the Forest Hill Cemetery, near the city of Madison, there is a soldiers' lot, in which are interred the remains of 219 Union soldiers, of which number 1 commissioned officer and 195 soldiers are known, and 23 are unknown, (all white.)

The lot is reported to have been donated to the United States, but the title to the land does not seem to have been conveyed.

The lot is a rectangle, 160 by 74 feet, divided into two equal sections by an avenue, 20 feet wide, crossing from the centers of the long sides. The graves are arranged in six parallel rows on each side of this avenue. They are all sodded and marked by head-boards, painted and lettered, except twelve graves, which are marked by marble slabs erected by friends.

The burials were from the general hospital in the city.

There are also 137 rebel prisoners of war buried in this cemetery.

In the Mound Cemetery, near the city of Racine, there is a soldiers' lot belonging to the United States, in which are interred the remains of forty Union soldiers, as follows, viz:

Commissioned officers, known	4
White soldiers, known	26
White soldiers, unknown	10
Total	40

The burials were from the hospital and from the camp (Utley) established in this vicinity.

The expenditures up to August 31, 1871, amount to $224.

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There are also buried in various local cemeteries in the State 71 Union soldiers, all known. Also on the military reservation at Fort Crawford, 4 known and 13 unknown Union soldiers.

The former were buried by their relatives and friends, the latter by the United States.

The expenditures up to August 31, 1871, amount to $68.45.

Recapitulation for the State of Wisconsin.

	Known.	Unknown.	Total.	Rebels.
Forest Home Cemetery	*65	.....	65	.....
Forest Hill Cemetery	196	23	219	137
Mound Cemetery	30	10	40	.....
Other places	71	.....	71	.....
Fort Crawford military reservation	4	13	17	.....
Total	366	46	412	137

* Commissioned officers, 13.

IOWA.

NATIONAL CEMETERY AT KEOKUK.

Inspected April 25, 1871.

This cemetery originally formed a part of the city cemetery, and the land was donated to the United States by the city authorities; but during the past year additional land has been purchased, and the whole of the ground inclosed by an iron fence, separating it entirely from the City or Oakland Cemetery.

The lot as enlarged is an irregular figure of six sides; the north side being a curve of double curvature, the other sides right lines. There are about 2½ acres of land, which slopes to the south and west, gently at first from the east, then quite rapidly.

The main entrance is in the east side, near the southeast corner of the city cemetery, and is closed by double iron gates.

Near this entrance is a new brick lodge, a story-and-a-half cottage with French roof and dormer windows, and three rooms on ground floor, and three chambers. The work on this cemetery was not completed at the time of this inspection; it bids fair to be very pretty.

The interments are all made in the lot donated by the city of Keokuk.

The graves are arranged in parallel rows generally; are well sodded, and are marked by head-boards, painted and lettered. Several marble slabs have been erected by friends; they are mostly "heaved" by frost, and are as perishable, almost, as the head-boards; two are already broken off.

The burials were from the general hospital in the city, and are as follows, viz:

	Known.	Unknown.
White Union soldiers	600	27

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The expenditures up to August 31, 1871, amount to $9,131.91.

There have been officially reported as buried in various local cemeteries in the State four hundred and forty-two Union soldiers, all known, of whom thirty-eight were commissioned officers.

They were all buried by relatives or friends.

INDIAN TERRITORY.

FORT GIBSON CEMETERY.

Inspected May 31, 1871.

This cemetery is situated on the military reserve, about two miles northeast from the village of Fort Gibson, on the road leading to Tahlequah. The lot is a square of 450 feet, and is inclosed by a wooden picket-fence in good order. It is divided into four equal sections by two avenues crossing the grounds at right angles to each other from the center of each side. At the center is a circular plat 80 feet in diameter, around which the avenues pass. Around the circumference of this plat are the graves of several officers or members of officers' families.

Three of the sections are filled with graves arranged in parallel rows. The fourth section contains only three graves, of soldiers who have recently died at the post.

The graves are all mounded up, and are marked by stakes, painted white and numbered in black, but they are not sodded or grassed over. Grass-seed should be sown at the proper season and pains taken to secure a good turf on the graves.

This cemetery was established last year, and all of the bodies removed from the old post cemetery.

The whole number of graves, according to the records in the office, is 2,123, and of these only 156 are of known Union soldiers. The remaining 1,967 contain the remains of the dead from the post of Fort Gibson since its first establishment, in 1831.

An Osage-orange hedge has been planted this season around the lot, just inside the fence. Many trees have also been planted during the past fall and winter, but with very poor success. In the central circle there are some flowers and shrubs growing well.

The lodge is on the opposite side of the road; is a wooden cottage of three rooms, in good order; has a cistern attached, and is surrounded by a flower and vegetable garden.

The superintendent was not at the cemetery at the time of this inspection, and I did not see him.

Decoration Day was celebrated with due honor by the garrison. One man is employed here the year round. Place in good order; flag-staff needed.

The expenditures up to August 31, 1871, amount to $1,700.23.

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GENERAL RECAPITULATION.

States and Territories.	White.		Colored.		Unknown and unclassified.	Total Union soldiers.	Citizens.	Rebel prisoners of war.
	Known.	Unknown.	Known.	Unknown.				
Maine	134	35	.....	.....	.....	169	.....	.....
New Hampshire	152	10	.....	.....	.....	162	.....	.....
Vermont	24	.....	.....	.....	.....	24	.....	.....
Massachusetts	231	.....	40	.....	.....	271	.....	.....
Rhode Island	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut	220	.....	.....	.....	.....	220	.....	.....
New York	3,438	69	199	3	.....	3,709	8	3,429
New Jersey	316	12	.....	.....	.....	328	.....	1,434
Pennsylvania	4,154	1,776	340	1	.....	6,271	.....	213
Delaware	71	12	3	1	.....	87	.....	140
Maryland	6,717	2,088	243	5	.....	9,053	19	2,298
District of Columbia	5,211	278	.....	.....	.....	5,489	117	125
West Virginia	639	613	.....	.....	.....	1,252	.....	.....
Virginia	27,922	36,868	2,305	1,135	.....	68,230	*4,069	565
North Carolina	3,206	14,255	284	703	.....	18,448	113	.....
South Carolina	3,974	6,235	795	950	.....	11,954	78	.....
Georgia	19,619	3,805	174	162	.....	23,760	21	118
Florida	685	576	154	98	.....	1,513	†405	72
Alabama	613	33	165	91	.....	902	.....	.....
Mississippi	5,590	10,826	197	8,726	.....	25,339	.....	.....
Louisiana	8,171	6,429	1,882	837	3,358	20,677	18	.....
Texas	750	346	980	954	.....	3,030	38	.....
Arkansas	3,677	3,643	506	327	.....	8,153	168	125
Tennessee	30,120	18,600	2,720	4,621	.....	56,061	816	.....
Kentucky	6,820	2,335	940	177	.....	10,272	127	.....
Ohio	1,682	111	18	.....	.....	1,811	1	2,337
Indiana	2,878	534	820	208	.....	4,440	11	1,556
Illinois	3,679	2,667	388	.....	.....	6,734	6	7,957
Missouri	7,943	2,571	23	1,044	.....	11,581	562	1,013
Kansas	897	858	.....	.....	.....	1,755	178	14
Michigan	140	53	.....	.....	.....	193	.....	.....
Wisconsin	366	46	.....	.....	.....	412	.....	137
Iowa	1,042	27	.....	.....	.....	1,069	.....	.....
Indian Territory	156	‡1,967	.....	.....	.....	2,123	.....	.....
Total	151,237	117,678	13,176	20,043	3,358	305,492	6,741	21,533

* Mostly colored refugees. † Sailors mostly; died before the rebellion.
‡ From Old Post Cemetery; died before the rebellion.

The soldiers buried in the remaining States and Territories belonged almost entirely to the Regular Army, and their deaths were not incidental to the rebellion; they are therefore omitted from the above recapitulation.

GENERAL REMARKS.

The Quartermaster General reports seventy-four national cemeteries.

Two of these—Gettysburgh and Antietam—have not yet been transferred to the United States.

Those at Rock Island, Illinois; San Antonio, Texas; Fort Saint Philip, Louisiana; and Ball's Bluff, Virginia, (4,) have never been placed in charge of superintendents; and five others are incorporated cemeteries, and taken care of by the cemetery authorities, viz: "Crown Hill," Indianapolis, Indiana; "Cave Hill," Louisville, Kentucky; Lexington, Kentucky; Loudon Park and Laurel, Baltimore, Maryland.

Superintendents have been appointed for, and reside at, the balance of the cemeteries, (63,) except at Mobile, Alabama, where it has latterly been so unhealthy that none has been appointed since the death of the last two; and also, except at the Beverly, New Jersey, cemetery, the superintendent of which resides in Philadelphia, and also has charge of the soldiers' lots in the various cemeteries in that vicinity.

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The Government owns lots in many other incorporated cemeteries, but they have not been designated as national cemeteries.

The whole expense of establishing and maintaining the cemeteries, and of collecting and burying the dead, is reported by the Quartermaster General as amounting to $4,165,306.26.

Thirty of the national cemeteries have been inclosed by stone or brick walls, either finished and covered with coping or now under contract and in course of construction, with the necessary funds reserved for their completion.

Twenty-two brick or stone lodges have been erected. Most of these are one-story cottages with three rooms, one being the office. Some few are one and a half stories high, giving three small chambers, and presenting a much better appearance than the others.

It is desirable that the superintendents should be married men; comfortable quarters should therefore be provided for a small family. I recommend that the lodges hereafter be built on the one-and-a-half-story plan.

When a lodge and a wall are required at the same cemetery both should be built in the same season, if possible, for while work of that character is being done at a cemetery more or less injury will be done to the trees and plants, and the grounds cannot be kept in good order.

The United States has not yet perfected its titles in fee-simple to all the lands embraced by national cemeteries; nine are still in abeyance.

Head-boards or wooden stakes are very unsatisfactory, as well as perishable, grave-marks. They should be replaced by something permanent, and, in my opinion, it would be economical to begin to replace them at once when they are decayed, instead of putting up new stakes as is now done.

Several plans have been proposed.

The Quartermaster General advocates the adoption of cast-iron galvanized blocks, which may be described as hollow truncated, four-sided pyramids, about fourteen inches long and six inches wide at the bottom, and ten inches high; the upper (horizontal) face being about ten inches long and four inches wide. Upon this face the name, regiment, State, &c., of the deceased are to be cast.

The weight is twenty pounds, and the cost, delivered at the various cemeteries, is reported as being only $1.16 each.

As each "block" (casting) would require a separate mold for the name, &c., this price seems extremely low. This cheapness and the completeness of the record of the soldier which, if known, may be inscribed thereon, are the great recommendations of these "blocks."

In my opinion, however, they are not well suited to the purpose designated.

The galvanizing will protect them from oxidation but a few years, for it is well known that when the smallest point of iron is exposed to air and moisture corrosion will begin at once, and extend ultimately over the protected parts. In the Druid Hill Park, near Baltimore, there are galvanized-iron posts planted along the curves of the drives, where the oxidation may be seen in full progress, although the posts were planted in or since 1866. It is hardly to be expected that the "blocks" would be better galvanized than these posts were, and the letters would present many more curves and angles, where the oxidation would be most likely to begin.

The "blocks" are designed to be placed upon the ground, partially sunk below the surface, and the interior (hollow part) filled with earth to keep them in place. The earth will absorb and retain moisture, and

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in cold weather be liable to freeze and expand, and burst the blocks. They will also be liable to be broken by accidental causes, and to be stolen for use as pots or troughs, or for sale as old iron.

I cannot consider them as *permanent* in any proper sense of the word.

Several kinds of marble and of slate have been proposed for slabs at the soldiers' graves. Now slabs, to be really *permanent* grave-marks, must, even when the material is excellent, be not only thick to prevent breaking, (I have seen many marble slabs erected by friends at soldiers' graves in our national cemeteries broken already,) but they must be sunk deep, or have foundations laid deep in the ground to prevent heaving from frost. This renders them quite expensive. They are also objectionable to me as monotonous to the eye when in long rows or large masses, and also as obstacles in the way of readily keeping the grounds in good order, cutting the grass neatly, raking up the leaves, &c. These objections, of course, apply to all structures above the upper surface of the graves.

Slabs made of an artificial stone, called "Ransome's patent concrete," have been put up in the Arlington and Annapolis national cemeteries as specimens.

These can readily be molded into various forms and bear different devices, such as those designating the three arms of the service, or the corps badges, but the stone has not been tested long enough in this country, with its extremes of climate, to justify its adoption in the national cemeteries.

I have given a good deal of attention to this matter of permanent grave-marks, and the best plan, according to my judgment, that I have seen or heard of is this, viz, granite blocks six or eight inches square in cross-section, and long enough to extend below frost, say two feet and a half for the latitude of Washington and south, and from three to four feet north of that place. The blocks to be sunk in the ground so that the upper end will be just flush with the top of the grave at its head; this upper end to be made horizontal and circular, and dressed smooth, and the name, regiment, State, &c., of the deceased cut around the margin and within.

These blocks could be obtained finished at the quarries in New England for something less than two dollars apiece. It might cost, on an average, as much more to transport them to the different cemeteries and put them in position. This would bring them at, say, four dollars apiece, which is much more expensive than the iron blocks above referred to; but I assume that it is the wish of the people to have these graves marked, not for this generation only, but for all time, and for this purpose the granite blocks are infinitely better than the iron ones. In my opinion these iron blocks would not last, under the most favorable circumstances, more than thirty or forty years, whereas the granite would endure as long as any human records should remain, and when once properly placed in position would require no further care.

To those who have visited the Spring Grove Cemetery near Cincinnati, Ohio, this plan of marking the graves by sunken posts will be readily understood and its appropriateness admitted.

With this kind of grave-mark, and with substantial inclosing walls, and a judicious arrangement of trees, the cemeteries would require but very little care to be constantly in good order, and always beautiful; and even were they neglected entirely they would still be very respectable in appearance, and the graves would remain so that they could be readily identified—without man *intentionally* removed the head-stone, and there would be *work* in that.

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As charts are to be prepared of each cemetery, giving accurately the position of each grave, and a copy is to be kept at each cemetery, I do not think it would be necessary to put these head-stones at the graves of the unknown dead.

In some of the cemeteries nearly all the dead are unknown. At Salisbury, North Carolina, for instance, the known are only 85, while the unknown are 12,027; and 11,700 of these are buried in trenches.

I have recommended in the body of this report that a suitable granite monument be erected at the Salisbury National Cemetery, by the General Government, in memory of the unfortunate men who suffered so much and died so miserably for their country in the vile prison-pen at that place; and I again respectfully call attention to the subject.

At Port Hudson the known are only 281, while the unknown are 3,518.

At Natchez the known are 253; the unknown, 2,833.

At Fort Gibson the known are 156; the unknown, 1,967.

At Fredericksburgh the known are 2,397; the unknown, 12,844.

At such places, where the unknown are buried by themselves, I think it would be sufficient (with the charts) to mark the rows of graves by granite posts at the end, giving the number of graves in each row, and to place in some conspicuous part of each cemetery some suitable monument bearing an inscription indicating the number of known and unknown Union soldiers buried in that particular cemetery.

In most of the national cemeteries large iron guns, generally 32-pounders, have been planted vertically on their bases as monuments. Now, a bronze shield, bearing in raised (cast) letters the inscription above referred to, might be attached to one of these guns between and below the trunnions in such a way as to improve its appearance and increase its usefulness as a monument.

Where the cemetery is large and guns are placed in the large divisions, each gun might be similarly treated, the inscription to refer to the particular division.

As these gun monuments are already in position very little expense would be incurred in carrying out the changes proposed. These gun monuments might also be improved in appearance by placing an eight or ten inch shot or shell on the face (muzzle) of each.

Should head-blocks be put up at all the graves, the known and unknown alike, it might still be well to make the modifications here suggested in the gun monuments, as they are now neither ornamental nor useful, beyond suggesting the profession of arms.

The expense of placing iron blocks at all the graves, known and unknown, alike, but leaving out the 11,700 buried in trenches in Salisbury, would be as follows, viz: 293,792, at $1.16, $340,798.72. Granite blocks for same would be, viz: 293,792, at $4, $1,175,168.

Were they placed only at the graves of the known, the expense would then be as follows, viz: for iron blocks, 164,413, at $1.16, $190,719.08. for granite blocks, 164,413, at $4, $657,652.

A suitable monument could be built at Salisbury for ten thousand dollars; and this sum would be in addition to the above estimates, whichever material was adopted.

Of course the first cost of the granite is much greater than the iron blocks, but from my point of view they would be much cheaper in the end, and better every way.

It will be perceived that this estimate is made for New England granite, the best known; but very good granite can be obtained in other localities, as near Richmond, Virginia, and Atlanta, Georgia. Some

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limestones are found in the West which are said to resist well the action of the very severe frosts of that country. If these stones should be found durable enough for the head-blocks, the above estimate for granite blocks might be reduced fully one-third, on account of the saving in transportation.

As a general thing the privies at the national cemeteries are unsightly and sometimes offensive. Often the grounds are very limited in extent, and it is difficult to place these structures out of sight.

The "earth-closet" system is now well established, and its merits acknowledged. It is admirably adapted to the Government cemeteries, and I recommend its adoption.

At each cemetery a tool-house is required; this and the "earth-closet" might be put under one roof, in a neat style of building, at very little cost.

The national cemeteries are, many of them, in out-of-the-way places and in unfriendly neighborhoods, and where the prices of all the necessaries of life are very high.

The consequence is that much discontent has been expressed by the superintendents at the inadequacy of their pay to support their families.

Men of intelligence and character are required, but they cannot be retained without proper provision is made for their support.

The bill now before Congress upon this subject provides a much-needed increase of their pay.

It is believed that the United States is the only nation that has ever taken such care to collect the remains of its dead soldiery and bury them respectably; and to make their *final* resting-places not only free from desecration, but beautiful and attractive.

This sentiment of respect to the memory of the fallen is humanizing and beneficial in its influence in enhancing the value of human life, and in pointing out the fearful ravages of war. It also hallows the achievements of individuals, and thereby elevates the position of the rank and file of the Army, who are too often forgotten or overlooked.

The work which has been so well begun should be continued to completion, and then be carefully preserved.

OSCAR A. MACK,
Major First Infantry, Brevet Colonel U. S. Army,
Inspector of Cemeteries.

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42D CONGRESS, 2d Session. | SENATE. | EX. DOC. No. 80.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

COMMUNICATING,

In compliance with a resolution of the Senate of May 11, 1872, *a statement in regard to certain railroad companies.*

MAY 21, 1872.—Ordered to lie on the table and be printed.

TREASURY DEPARTMENT,
Washington, D. C., May 20, 1872.

SIR: I have the honor to transmit herewith a statement giving the information required from this Department by Senate resolution of May 11, 1872, in the following words:

"That the Secretary of the Treasury be, and he is, directed to transmit to the Senate a statement of the following particulars in regard to certain railroad companies respectively, namely, the Central Pacific and Western Pacific Railroads, the Union Pacific Railroad, the Kansas Pacific, the Central Branch Union Pacific, Sioux City and Pacific:

"1. The whole amount of bonds of the United States issued to each company, and for what number of miles, and of the interest paid thereon by the United States.

"2. The credits allowed to each company on interest account, and for what services rendered, together with the arrears of interest unpaid, and the percentage of credits allowed to each company on the whole amount of interest due by the company.

"3. The total sum due to the United States on account of principal and interest of bonds.

"4. The total amount of principal and interest accruing on such bonds at maturity, at the rate of payment thus far made on account of interest.

"5. The amount and nature of bonds or other obligations, issued by each company, or of obligations created by operation of law, and constituting a mortgage or lien on its road or other property prior to the claim or lien of the United States during the two periods, one ending with the completion of the road, and the other ending with the date of the report made in pursuance of this resolution.

"6. That the Secretary of the Interior be, and he is hereby, directed to comply with this resolution so far as relates to information, if any, exclusively in his possession; and that a copy of this resolution be transmitted to him."

I am, very respectfully,

GEO. S. BOUTWELL,
Secretary.

Hon. SCHUYLER COLFAX,
President of the United States Senate.

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Name of railway.	Amount of bonds issued.	For what number of miles.	Total amount of interest paid by United States to January 1, 1872.	Credits allowed on interest account for services performed for the several Departments.				Percentage of credits allowed on whole amount of interest due United States.	Balance of interest due the United States.	Total amount of principal and interest due United States.	Principal and interest due at maturity at present rates of payments.
				Treasury Department.	War Department.	Navy Department.	Post-Office Department.	Total amount of interest repaid by transportation.			
Central Pacific	$25, 885, 120	737. 50	$5, 591, 922 47	$2, 114 50	$133, 175 08	$72 99	$396, 330 72	$531, 693 29	.095	$5, 060, 129 18	$30, 945, 249 18	$67, 570, 798 05
Kansas Pacific	6, 303, 000	393. 9425	1, 780, 263 09	400 88	200, 912 49	6, 502 50	145, 881 93	953, 697 80	.535	826, 565 29	7, 129, 565 29	11, 135, 141 52
Union Pacific	27, 236, 512	1, 038. 68	6, 164, 657 13	1, 319 60	1, 543, 736 87	18, 773 24	541, 960 21	2, 105, 789 92	.341	4, 058, 867 21	31, 295, 379 21	58, 156, 746 98
Central Pacific, Union Branch.	1, 600, 000	100.	445, 808 26			11 13	10, 203 29	10, 214 42	.022	435, 593 84	2, 035, 593 84	4, 406, 650 39
Western Pacific	1, 970, 560	103. 16	308, 562 54		1, 069 00		8, 281 25	9, 350 25	.030	299, 212 29	2, 269, 772 29	5, 402, 088 02
Sioux City and Pacific	1, 628, 320	101. 77	340, 756 69			406 41		406 41	.001	340, 350 28	1, 968, 670 28	4, 555, 959 02
Total	64, 623, 512	2, 475. 0525	14, 631, 570 18	3, 834 98	2, 478, 893 44	25, 766 97	1, 102, 657 40	3, 611, 159 09	.....	11, 020, 718 09	75, 044, 230 09	151, 227, 383 89

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LETTER

FROM

THE SECRETARY OF THE NAVY,

COMMUNICATING,

In compliance with a resolution of the Senate of April 22, 1872, information in regard to assistance rendered by the Navy Department in pursuance of the provisions of "An act to encourage and facilitate telegraphic communication between the Eastern and Western Continents."

MAY 23, 1872.—Ordered to lie on the table and be printed.

NAVY DEPARTMENT,
Washington, D. C., May 21, 1872.

SIR: I have the honor to acknowledge the receipt of a copy of a resolution passed by the Senate of the United States on the 22d ultimo, viz:

"*Resolved*, That the Secretary of the Navy be directed to communicate to the Senate whether any, and if so, what assistance has been rendered by the Navy Department in pursuance of the provisions of the second section of an act entitled, 'An act to encourage and facilitate telegraphic communication between the Eastern and Western Continents, approved July 1, 1864, and at what expense to the United State,'" and to report as follows:

The United States steamer Saginaw was placed at the disposal of the Western Union Telegraph Company in 1866, in pursuance of the section of the act referred to in the resolution.

This vessel was fitted out for this special service at the navy-yard, Mare Island, California, in the spring of 1866, her preparation having been commenced about the 11th of April. Her preparation was completed July 12, and the following day she sailed for Victoria, under the orders of the chief engineer of the company. She was compelled to return for repairs, rendered necessary from injuries sustained in a storm encountered when a few days out. She took her second departure July 31, and returned from the special service under the company December 28, 1866.

It is difficult to estimate precisely the expense to the United States on account of this service. The several Bureaus of the Department, which were called on for a statement of such expense, have submitted the following as the aggregate of the fitting out of the vessel and maintaining her during the cruise:

Bureau of Medicine and Surgery	$280 62
Bureau of Navigation	507 00
Bureau of Provisions and Clothing	6,310 15

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Bureau of Equipment and Recruiting	$6,139 95
Bureau of Steam Engineering	16,765 03
Bureau of Construction and Repairs	23,431 99
Total	53,434 74

The item under the Bureau of Construction includes $6,855.76 expended for repairing the injuries sustained by the Saginaw in the storm to which I have referred.

The estimate does not include the pay of the officers and crew of the vessel, which would have gone on under any other circumstances.

Although the entire estimate may not properly be chargeable to the special service on which the vessel was engaged, the greater part of it may be.

Very respectfully, &c.,

GEO. M. ROBESON,
Secretary of the Navy.

Hon. SCHUYLER COLFAX,
Vice-President of the United States,
and President of the Senate.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 82.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

COMMUNICATING,

In compliance with a resolution of the Senate of March 12, 1872, information respecting the amount of money expended by the Government during the last three years for telegraphing by ocean cables.

May 24, 1872.—Referred to the Committee on Foreign Relations and ordered to be printed.

To the Senate of the United States:

I have the honor to transmit herewith, in answer to the resolution of the Senate of March 12, requesting to be informed of "the amount of money expended by the Government of the United States during the last three years for telegraphing by ocean cables," reports from the different Departments of the Government to which the resolution was referred.

U. S. GRANT.

EXECUTIVE MANSION, *May* 23, 1872.

DEPARTMENT OF STATE, *April* 2, 1872.

The Secretary of State, to whom was referred the resolution of the Senate of the 12th ultimo, "that the President of the United States be requested to inform the Senate, if not incompatible with the public interests, what amount of money has been expended by the Government of the United States during the last three years for telegraphing by ocean cables, and the different sums paid to each, respectively, and what were the rates paid," has the honor to report to the President the accompanying statement of the disbursing clerk of the Department, showing the amount of money disbursed by him during the last three years for telegraphing from the Department of State by ocean cables, the different sums expended by him on different cables, respectively, and the rates paid. The Secretary of State has the honor also to submit the report of the Fifth Auditor, showing the amount expended by ministers and consuls of the United States abroad.

Respectfully submitted.

HAMILTON FISH.

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List of papers.

1. Amounts paid by the disbursing clerk of the Department of State.
2. Atlantic cable rates on Government business.
3. Cuban cable rates.
4. Report of Fifth Auditor. Accompanying papers: Amount paid by United States consuls; amounts paid by missions abroad.

Amounts paid by the disbursing clerk of the Department of State for cable telegrams from March 1, 1869, to March 1, 1872.

Date.	Am't paid.	Total.
ATLANTIC CABLE.		
March 1, 1869, to March 1, 1870	$4,309 87	
March 1, 1870, to March 1, 1871	4,938 19	
March 1, 1871, to March 1, 1872	2,937 63	$12,185 69
CUBA CABLE.		
March 1, 1869, to March 1, 1870	201 51	
March 1, 1870, to March 1, 1871	197 02	
March 1, 1871, to March 1, 1872	59 98	458 51
FRENCH CABLE.		
1869	9 46	9 46
Total		$12,653 66

For *rates*, see annexed A and B.

The report from the Fifth Auditor, in reply to the resolution, contains the amount expended by ministers and consuls of the United States abroad.

THEODORE W. DIMON,
Disbursing Clerk.

A.

ATLANTIC CABLE RATES ON GOVERNMENT BUSINESS.

Washington to London.

Plain messages, ten words:

January 1, 1869, to June 1, 1869, $17.35; extra words, $1.72.
June 1, 1869, to September 1, 1869, $10.40; extra words, $1.04.
September 1, 1869, to December 15, 1870, $7.80; extra words, 78 cents.
December 15, 1870, to April 1, 1871, $15.30; extra words, $1.53.
April 1, 1871, to July 1, 1871, $7.80; extra words, 78 cents.
July 1, 1871, to date, $5.30; extra words, 53 cents.

Cipher messages, ten words:

January 1, 1869, to June 1, 1869, $17.35; extra words, $1.72.
June 1, 1869, to September 1, 1869, $10.40; extra words, $1.04.
September 1, 1869, to December 15, 1870, $7.80; extra words, 78 cents.
December 15, 1870, to February 1, 1871, $15.30; extra words, $1.53.
February 1, 1871, to April 1, 1871, $30.60; extra words, $3.06.
April 1, 1871, to July 1, 1871, $15.60; extra words, $1.56.
July 1, 1871, to date, $10.60; extra words, $1.03.

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Address, date, and signature charged for.

NEW YORK, *March* 19, 1872.

B.

CUBA CABLE.

Washington to Havana.

To January 15, 1870, twenty words, $6.50; extra words, 32 cents.

Since January 15, 1870, ten words, $3.25; extra words, 22 cents.

To the above has been added, since November 1, 1870, the Spanish government tax of 40 cents for every ten and fraction of ten words.

Cipher messages charged same as plain.

Address, date, and signature charged for.

NEW YORK, *March* 19, 1872.

FRENCH CABLE.

In 1869, $7 gold, and $7.50 currency, for first ten words, including address, date, and signature.

TREASURY DEPARTMENT, FIFTH AUDITOR'S OFFICE,
Washington, March 27, 1872.

SIR: I inclose herewith statements of the amounts paid for telegraphing by ocean cables for the last three years by United States ministers and consuls.

Respectfully, yours,

J. H. ELA, *Auditor.*

H. W. DIMON, Esq.,
Disbursing Clerk, Department of State,
Washington, D. C.

TREASURY DEPARTMENT, FIFTH AUDITOR'S OFFICE,
Washington, March 26, 1872.

Amount paid for ocean telegrams by United States consuls from January 1, 1869, *to December* 31, 1871.

International Ocean Telegraph Company	$775 96
British and Irish Magnetic Telegraph Company	154 83
Cuba Submarine Telegraph Company	25 25
Total	956 04

J. H. ELA, *Auditor.*

Amounts paid by missions abroad for cable telegrams from January 1, 1869, *to December* 31, 1871, *as appears from accounts adjusted in this office.*

1869, 1st quarter—John P. Hale, Spain	$64 60
1869, 2d quarter—John P. Hale, Spain	165 67
1869, 3d quarter—D. E. Sickles, Spain	57 22
1870, 1st quarter—D. E. Sickles, Spain	2,349 66
1870, 2d quarter—D. E. Sickles, Spain	1,345 84
1870, 3d quarter—D. E. Sickles, Spain	155 78
1870, 4th quarter—D. E. Sickles, Spain	701 81
1871, 1st quarter—D. E. Sickles, Spain	487 02
1871, 2d quarter—D. E. Sickles, Spain	288 34
1871, 3d quarter—D. E. Sickles, Spain	105 52
1869, 1st quarter—H. S. Sanford, Belgium	539 60

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1869, 3d quarter—H. S. Sanford, Belgium	$124 17
1870, 4th quarter—J. R. Jones, Belgium	48 63
1871, 1st quarter—J. R. Jones, Belgium	22 00
1871, 2d quarter—J. R. Jones, Belgium	15 92
1871, 3d quarter—J. R. Jones, Belgium	70 45
1871, 4th quarter—J. R. Jones, Belgium	22 40
1869, 1st quarter—George P. Marsh, Italy	53 56
1870, 2d quarter—George P. Marsh, Italy	98 43
1871, 2d quarter—George P. Marsh, Italy	59 36
1869, 2d quarter—George Bancroft, Germany	71 25
1870, 3d quarter—George Bancroft, Germany	194 26
1871, 2d quarter—George Bancroft, Germany	93 62
1869, 2d quarter—J. E. Harvey, Portugal	54 14
1870, 1st quarter—S. Shellabarger, Portugal	15 62
1871, 2d quarter—C. H. Lewis, Portugal	15 00
1871, 3d quarter—C. H. Lewis, Portugal	15 00
1871, 4th quarter—C. H. Lewis, Portugal	11 00
1870, 1st quarter—J. L. Motley, England	1,615 65
1871, 3d quarter—B. Moran, England	432 29
1871, 4th quarter—R. C. Schenck, England	1,239 52
1870, 4th quarter—William McVeagh, Turkey	20 94
1870, 4th quarter—E. B. Washburne, France	698 87
1871, 3d quarter—E. B. Washburne, France	86 08
1871, 3d quarter—A. G. Curtin, Russia	86 13
1871, 4th quarter—A. G. Curtin, Russia	7 60
1871, 4th quarter—A. G. Curtin, Russia	46 59
	11,87[illegible] 82

J. H. ELA, *Auditor.*

TREASURY DEPARTMENT, FIFTH AUDITOR'S OFFICE,
March 27, 1872.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
March 23, 1872.

SIR: In reply to a resolution of the Senate, adopted on the 12th of March instant, in relation to cable telegrams, and referred by you to the Secretary of the Treasury, I have the honor to transmit a statement showing the payments made by this Department for dispatches sent by the ocean cables from July 1, 1869, to the 22d day of March, 1870, and showing, also, the rates charged for their transmission.

Dispatches for Europe are delivered at the office of the Western Union Telegraph Company, in Washington, and are transmitted by that company without special instructions as to the ocean cable to be used.

This Department has not the means of readily furnishing similar information in reference to dispatches sent from the other Executive Departments.

This difficulty arises from the fact that there is not a special appropriation made for telegraphic expenses; consequently, payment is made in each case from the appropriation to which the subject-matter of the dispatch relates.

I inclose a copy of a letter from the Acting Comptroller of the Treasury on this subject.

I also herewith return the resolution.

I have the honor to remain, very respectfully, your obedient servant,

GEO. S. BOUTWELL,
Secretary.

The PESIDENT,
Washington, D. C.

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Statement showing the amounts paid by the Treasury Department to the Western Union Telegraph Company for telegraphing by ocean cables from October 29, 1869, to March 2, 1872.

Date.	Number of words.	Amount.	Rate per word.
October 29, 1869	17	$13 26	.78
March 10, 1871	655	1,016 89	1.553
March 22, 1871	597	926 90	1.553
April 10, 1871	66	106 23	1.61
May 29, 1871	34	26 52	.78
August 9, 1871	31	16 43	.53
September 2, 1871	341	188 24	.551
September 14, 1871	93	49 29	.53
October 11, 1871	231	124 68	.54
November 24, 1871	41	23 85	.581
January 19, 1872	275	148 93	.542
March 2, 1872	87	47 17	.542
Total	2,462	2,688 38	1.089

TREASURY DEPARTMENT, COMPTROLLER'S OFFICE,
March 20, 1872.

SIR: The resolution of the Senate, asking what amount has been paid for cable dispatches, on what lines, and the rates paid, during three years past, and referred by you to this office, is returned unanswered for the following reasons:

The telegrams sent and received on account of foreign intercourse come under the cognizance of the Department of State, and this Department has no means of knowing the amount expended or the rates paid on that account.

The cable telegrams sent by the Treasury Department and those addressed to the Secretary of the Treasury are paid from, and charged to, the appropriations to which the messages relate, and hence are so diffused through the accounts in this Department that it would be impossible to collect them so as to give the aggregate required.

I am, sir, very respectfully yours,

WM. HEMPHILL JONES,
Acting Comptroller.

Hon. GEO. S. BOUTWELL,
Secretary of the Treasury.

WAR DEPARTMENT,
Washington City, April 24, 1872.

SIR: I have the honor to report, in answer to your reference of a copy of Senate resolution of March 12, 1872, that none of the appropriations for this Department have been drawn upon for the payment of ocean cable dispatches.

Very respectfully, your obedient servant,

WM. W. BELKNAP,
Secretary of War.

The PRESIDENT.

NAVY DEPARTMENT,
Washington, April 2, 1872.

SIR: In reply to a resolution of the Senate of the United States, dated March 12, 1872, I have the honor to inform you that the following

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sums have been paid by this Department for telegraphing by ocean cables during the last three years, viz:

Atlantic cable	$1,062 [illegible]
Cuban cable	131 6[illegible]
	1,194 [illegible]

The Department is unable to give the rates paid for these messages, as that information could not be furnished by the Western Union Telegraph Company, from whom all cable telegrams are received.

I have the honor to be, very respectfully,

GEO. M. ROBESON,
Secretary of the Navy.

The PRESIDENT.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., March 29, 1872.

SIR: I have the honor to acknowledge the receipt of a copy of a resolution, adopted in the Senate of the United States on the 12th instant, in the following words:

Resolved, That the President of the United States be requested to inform the Senate, if not incompatible with the public interests, what amount of money has been expended by the Government of the United States during the last three years for telegraphing by ocean cables, and the different sums paid to each, respectively, and what were the rates paid—

and to inform you that, after a careful examination of the records of this Department, it does not appear that any money has been paid on account of this Department for telegraphing by any of the ocean cables during the last three years.

I have the honor to be, with great respect, your obedient servant,

C. DELANO,
Secretary.

The PRESIDENT.

POST-OFFICE DEPARTMENT,
Washington, D. C., April 15, 1872.

With reference to the resolution adopted by the Senate on the 12th and referred to me on the 27th ultimo, (copy returned herewith,) requesting information relative to the amount of money expended and rates paid by the Government of the United States during the last three years for telegraphing by ocean cables, I have the honor respectfully to report that the following sums have been expended by this Department for ocean telegraphing during the past three years, viz:

From July 1, 1869, to June 30, 1870	$413 [illegible]
From July 1, 1870, to June 30, 1871	121 62
From July 1, 1871, to April 1, 1872	220 6[illegible]
Total	755 [illegible]

The above amount has been paid the Western Union Telegraph Company.

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I have further to state that the cable rates have been frequently changed during the past three years, and that no correct information can be furnished by the officers of the company in this city of the different rates of charge, as they have kept no record of the varying charges. The present rates are stated to be as follows, viz:

To Great Britain, $10.30 for first ten words, and $1.03 for each additional word, (gold.)

From Great Britain to North Germany, $1.50 for first twenty words, and 75 cents for each additional ten words or fraction thereof.

From Great Britain to Denmark, $1.25.

I am, very respectfully, your obedient servant,

JNO. A. J. CRESWELL,
Postmaster General.

The PRESIDENT.

DEPARTMENT OF JUSTICE,
Washington, April 1, 1872.

SIR: I have the honor to acknowledge the receipt of a copy of the resolution of the Senate calling upon "the President of the United States to inform that body, if not incompatible with the public interests, what amount of money has been expended by the Government of the United States during the last three years for telegraphing by ocean cables, and the different sums paid to each, respectively, and what were the rates paid."

Upon a careful examination of the records, it does not appear that this Department has, during the time specified, paid anything for telegraphing by the ocean cables, and I am therefore unable to furnish any information called for by said resolution.

Very respectfully, your obedient servant,

GEO. H. WILLIAMS,
Attorney General.

The PRESIDENT.

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LETTER

FROM

THE SECRETARY OF THE TREASURY,

COMMUNICATING,

In compliance with a resolution of the Senate of May 18, 1872, *a statement of the amount of coin on deposit in or to the credit of the Treasury on the first day of each of the preceding four months.*

MAY 25, 1872.—Ordered to lie on the table and be printed.

TREASURY DEPARTMENT, *May* 24, 1872.

SIR: In answer to the Senate resolution of the 18th instant, as follows:

Resolved, That the Secretary of the Treasury be directed to furnish the Senate with a statement of the amount of coin on deposit to the credit of or in the Treasury on the first day of the present and on the first day of each of the next preceding four months, together with a statement of the persons and places with whom the same was deposited, and the amount at each place, and with each person, at each of the respective dates—

I have the honor to inclose herewith a copy of a letter from the Treasurer of the United States, transmitting the statement required, and a memorandum explaining the same.

Very respectfully, your obedient servant,

GEO. S. BOUTWELL,
Secretary.

Hon. SCHUYLER COLFAX,
Vice-President of the United States, and
President Senate, Washington, D. C.

TREASURY OF THE UNITED STATES,
Washington, May 23, 1872.

SIR: In compliance with instructions contained in your indorsement of the 20th instant on a copy of resolution of the Senate of the United States of the 18th instant, I transmit herewith a statement showing the coin balances in the Treasury of the United States on the 1st instant, and on the first day of each of the four preceding months, specified as requested.

I inclose also a memorandum explaining balances reported under "loan account," and balances of "excess" over reported balances on public-debt statements.

Very respectfully,

F. E. SPINNER,
Treasurer of the United States.

Hon. GEO. S. BOUTWELL,
Secretary of the Treasury.

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MEMORANDUM

In regard to "loan account," as per attached statement:

These amounts are represented by United States bonds of 1862, and accrued interest on hand redeemed and paid for in coin by the Treasury of the United States, which bonds, however, were not finally verified, and therefore not entered on the books of the Department, but entered and counted in the mean time on the public-debt statements as coin.

In regard to "excess:"

This excess over the amounts reported in the public-debt statements is accounted for by the fact that the public-debt statement is made out on the first day of the month, when only the receipts with the Treasurer of the United States, Washington, District of Columbia, and with the Assistant Treasurer of the United States, New York, are reported, while the balances on the accompanying statement were struck after the reports of all the assistant treasurers and depositaries of the United States were received.

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Statement showing the amount of coin on deposit to the credit of or in the Treasury on the first day of the present and on the first day of each of the next preceding four months, together with a statement of the persons and places with whom the same was deposited, and the amount at each place and with each person at each of the respective dates.

	January 1, 1872.	February 1, 1872.	March 1, 1872.	April 1, 1872.	May 1, 1872.
Treasurer United States, Washington, District of Columbia	$3,455,094 07	$8,282,137 76	$3,668,889 01	$3,469,853 45	$3,687,585 43
Assistant treasurer United States, New York, New York	54,742,389 34	66,056,477 89	72,664,808 63	55,300,381 89	68,182,644 37
Boston, Massachusetts	5,174,613 72	4,379,455 82	4,793,315 06	5,057,579 78	6,068,045 24
Philadelphia, Pennsylvania	5,615,999 88	5,186,837 81	5,836,131 83	5,798,688 26	6,480,196 56
Saint Louis, Missouri	774,744 31	726,675 34	778,612 44	821,277 36	885,513 64
San Francisco, California	3,667,313 27	3,046,267 16	4,034,761 28	4,778,747 04	4,711,508 74
New Orleans, Louisiana	410,930 42	347,709 50	438,824 33	803,749 84	1,477,106 35
Charleston, South Carolina	59,899 31	81,455 15	82,440 57	40,035 78	56,878 61
Baltimore, Maryland	1,027,623 20	899,529 98	1,146,200 94	715,655 14	849,322 79
Depositary United States, Buffalo, New York	51,796 62	43,744 58	70,148 76	68,413 75	35,491 22
Cincinnati, Ohio	564,626 67	272,232 68	317,239 30	303,749 75	305,253 02
Chicago, Illinois	146,420 61	97,648 92	130,898 91	107,871 42	152,280 73
Louisville, Kentucky	26,310 19	30,550 97	32,815 07	36,285 77	41,165 29
Pittsburgh, Pennsylvania	215,094 49	160,172 77	160,464 05	159,830 44	160,792 71
Olympia, Washington Territory	32	32	32	32	32
Mobile, Alabama	55,906 94	46,780 60	92,870 48	122,673 76	164,651 29
Tucson, Arizona	5,000 00	5,000 00	5,000 00	5,000 00	5,000 00
Santa Fé, New Mexico				11 41	11 41
Assay Office United States, New York, New York	3,752,513 00	3,752,513 00	3,752,513 00	3,752,513 00	3,752,513 00
Mint United States, Philadelphia, Pennsylvania	1,132,429 16	1,132,429 16	1,132,429 16	1,132,429 16	1,132,429 16
Branch mint United States, San Francisco, California	2,745,000 00	2,745,000 00	2,745,000 00	2,745,000 00	2,745,000 00
Denver, Colorado	3,100 00	3,100 00	3,100 00	3,100 00	3,100 00
Carson City, Nevada	150,000 00	150,000 00	150,000 00	150,000 00	150,000 00
Loan account	28,112,828 88	11,202,369 19	8,983,916 89	35,294,309 63	8,435,851 00
Total	111,892,634 50	103,649,088 60	111,020,380 03	120,667,156 98	109,482,340 88
Amounts of coin reported in public-debt statements of the above dates	111,432,826 91	103,371,730 15	110,405,319 02	120,200,610 29	108,953,738 68
Excess	459,807 59	277,358 45	615,061 01	466,546 69	528,602 20

OFFICE TREASURER UNITED STATES, *May* 23, 1872.—C. L. C.

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42D CONGRESS, 2d Session. | SENATE. | Ex. Doc. No. 84.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

IN RELATION TO

The ambiguity of an act to aid in the erection of an equestrian statue of the late General John A. Rawlins.

MAY 31, 1872.—Read, referred to the Committee on Military Affairs and ordered to be printed.

To the Senate and House of Representatives:

I have the honor to respectfully call the attention of Congress to an act approved July 14, 1870, directing the Secretary of War to place at the disposal of the President certain bronze ordnance to aid in the erection of an equestrian statue of the late General John A. Rawlins; and to the facts that no appropriation of money to pay for the statue is made by the resolution, no artist is named or party designated to whom the ordnance is to be delivered.

In view of the ambiguity of the statute, I would recommend that Congress signify what action is desired as to the selection of the artist, and that the necessary sum required for the erection of the monument be appropriated. A board of officers should also be named to designate the location of the monument.

U. S. GRANT.

EXECUTIVE MANSION, *May* 31, 1872.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

RETURNING,

Without his approval, "An act for the relief of J. Milton Best."

JUNE 1, 1872.—Read, referred to the Committee on Claims, and ordered to be printed.

To the Senate of the United States:

I have examined the bill entitled "An act for the relief of J. Milton Best," and, being unable to give it my approval, return the same to the Senate, the House in which it originated, without my signature.

The bill appropriates the sum of $25,000 to compensate Dr. J. Milton Best for the destruction of his dwelling-house and its contents by order of the commanding officer of the United States military forces at Paducah, Kentucky, on the 26th day of March, 1864. It appears that this house was one of a considerable number destroyed for the purpose of giving open range to the guns of a United States fort. On the day preceding the destruction the houses had been used as a cover for rebel troops attacking the fort, and, apprehending a renewal of the attack, the commanding officer caused the destruction of the houses. This, then, is a claim for compensation on account of the ravages of war. It cannot be denied that the payment of this claim would invite the presentation of demands for very large sums of money, and such is the supposed magnitude of the claims that may be made against the Government for necessary and unavoidable destruction of property by the Army that I deem it proper to return this bill for reconsideration.

It is a general principle of both international and municipal law that all property is held subject not only to be taken by the Government for public uses, in which case, under the Constitution of the United States, the owner is entitled to just compensation, but also subject to be temporarily occupied, or even actually destroyed, in times of great public danger and when the public safety demands it, and in this latter case governments do not admit a legal obligation on their part to compensate the owner. The temporary occupation of, injuries to, and destruction of property caused by actual and necessary military operations are generally considered to fall within the last-mentioned principle. If a government makes compensation under such circumstances, it is a matter of bounty rather than of strict legal right.

If it be deemed proper to make compensation for such losses, I suggest, for the consideration of Congress, whether it would not be better, by general legislation, to provide some means for the ascertainment of the damage in all similar cases, and thus save to claimants the expense,

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inconvenience, and delay of attendance upon Congress, and, at the same time, save the Government from the danger of having imposed upon it fictitious or exaggerated claims, supported wholly by *ex-parte* proof. If the claimant in this case ought to be paid, so ought all others similarly situated; and that there are many such cannot be doubted. Besides, there are strong reasons for believing that the amount of damage in this case has been greatly overestimated. If this be true, it furnishes an illustration of the danger of trusting entirely to *ex-parte* testimony in such matters.

U. S. GRANT.

WASHINGTON, *June* 1, 1872.

Forty-second Congress of the United States of America, at the second session, begun and held at the city of Washington, on Monday, the fourth day of December, one thousand eight hundred and seventy-one.

AN ACT for the relief of J. Milton Best.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be, and is hereby, appropriated, out of any moneys in the Treasury not otherwise appropriated, the sum of twenty-five thousand dollars to Dr. J. Milton Best, of Paducah, Kentucky, in compensation for the destruction of his dwelling-house and its contents by order of Colonel S. J. Hicks, commanding the United States troops at Paducah, Kentucky, on the twenty-sixth day of March, eighteen hundred and sixty-four.

J. G. BLAINE,
Speaker of the House of Representatives.
SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

I certify that this act did originate in the Senate.

GEO. C. GORHAM,
Secretary.

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MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

RETURNING,

Without his approval, "An act for the relief of Thomas B. Wallace, of Lexington, in the State of Missouri."

JUNE 7, 1872.—Read, referred to the Committee on Claims, and ordered to be printed.

To the Senate of the United States:

I have the honor to return herewith Senate bill No. 569, an act entitled "An act for the relief of Thomas B. Wallace, of Lexington, in the State of Missouri," without my approval.

This claim, for which eleven thousand two hundred and fifty dollars are appropriated by this bill, is of the same nature and character as the claim of Dr. J. Milton Best, which was returned to the Senate on the 1st instant without my signature.

The same reasons which prompted the return of that bill for reconsideration apply in this case, which also is a claim for compensation on account of the ravages of war, and comes under the same general principle of both international and municipal law, that all property is held subject not only to be taken by the Government for public uses—in which case, under the Constitution of the United States, the owner is entitled to part compensation—but also subject to be temporarily occupied or even actually destroyed in times of great public danger, and when the public safety demands it; and in the latter case governments do not admit a legal obligation on their part to compensate the owner.

The temporary occupation of, injuries to, and destruction of, property caused by actual and necessary military operations are generally considered to fall within the last-mentioned principle; and if a government makes compensation under such circumstances, it is a matter of bounty rather than of strict legal right. If it be deemed proper to make compensation for such losses, I renew my recommendation that provision be made by general legislation for all similar cases.

U. S. GRANT.

EXECUTIVE MANSION, *June* 7, 1872.

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FORTY-SECOND CONGRESS OF THE UNITED STATES OF AMERICA; AT THE SECOND SESSION,

Begun and held at the city of Washington on Monday, the fourth day of December, one thousand eight hundred and seventy-one.

AN ACT for the relief of Thomas B. Wallace, of Lexington, in the State of Missouri.

Whereas, on the thirteenth day of September, eighteen hundred and sixty-one, the dwelling-house and out-buildings, and the furniture and other property therein, belonging to Thomas B. Wallace, of the city of Lexington, in the State of Missouri, and situated in said city, were destroyed by fire, by order of Colonel James A. Mulligan, in command of the United States military forces then stationed at said city; and whereas the destruction of said houses and other property was ordered and was necessary for the protection and preservation of the property of the United States at said city, and the protection and preservation of the lives of the officers and soldiers under the command of said Mulligan, and at the time actually engaged in defending said city and in maintaining the authority of the Government of the United States against an attack of the confederate army, under command of General Sterling Price: Therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the sum of eleven thousand two hundred and fifty-two dollars is hereby appropriated, out of any money in the Treasury not otherwise appropriated, for the purpose of paying said Wallace the value of his said property, destroyed as aforesaid, and the damages sustained by him by reason of its said destruction.

J. G. BLAINE,
Speaker of the House of Representatives.
SCHUYLER COLFAX,
Vice-President of the United States and President of the Senate.

I certify that this act did originate in the Senate.

GEO. C. GORHAM,
Secretary,
By W. J. McDONALD,
Chief Clerk.

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LETTER

FROM

THE SECRETARY OF THE TREASURY,

ACCOMPANYING

A report of the Solicitor of the Treasury relative to the claim of the Choctaw Indians, known as the "Net Proceeds Claim."

JUNE 7, 1872.—Ordered to lie on the table and be printed.

TREASURY DEPARTMENT,
Washington, D. C., June 6, 1872.

SIR: Several weeks since a statement was made to the Department that the claim of the Choctaw Indians, known as the "net proceeds claim," was not founded in equity, and that an examination would show that it ought not to be paid by the Government.

Upon this representation, I directed the Solicitor of the Treasury to hear the parties who professed to have knowledge of the circumstances connected with the treaty of 1855 with the Choctaw Nation, of the statement of the account between that nation and the United States under that treaty, and of the action of the Senate in the year 1859; and he was also directed to examine all the treaties with that nation for the purpose of ascertaining whether there was any foundation for the statements made to the Department.

The Solicitor has made the examination as directed, and submitted his report, a copy of which I have the honor to transmit herewith.

The account as stated by the Department of the Interior, under the treaty of 1855, and the resolution of the Senate of March 9, 1859, showed a balance due to the Choctaw Nation of $2,232,500.85. The sum of $250,000 was appropriated to the Choctaw Indians in the year 1861, and at the same time authority was given for an issue of bonds on the same account in the sum of $250,000.

The bonds have not yet been delivered, but an application is now pending in the Department by persons claiming to represent the Choctaw Indians for their issue without delay. Proceedings are, moreover, pending in the Supreme Court of the United States, seeking to compel the Secretary of the Treasury to issue the bonds to another party claiming them under an order or assignment alleged to have been made by the agents of the Choctaw Nation several years since.

The report of the Solicitor of the Treasury and an examination of the treaties of 1830 and 1855 with the Choctaw Indians, aided by such information as I have been able to obtain from other sources, tend very strongly to show that there is no equitable ground on which the Gov-

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ernment can be required to issue the bonds in question, or make payment of the large sum of money covered by the claim of the Choctaw Nation.

The Department, however, has not had the means of a thorough examination, nor will there be time during the present session of Congress for the proper inquiries by a committee of either House, and I have therefore the honor to suggest that a bill or joint resolution be passed authorizing the Secretary of the Treasury to delay the issue of the bonds until there shall have been further investigation and action by Congress.

Very respectfully,

GEO. S. BOUTWELL,
Secretary.

Hon. SCHUYLER COLFAX,
Vice-President and President of the Senate,
Washington, D. C.

DEPARTMENT OF JUSTICE,
OFFICE OF THE SOLICITOR OF THE TREASURY,
Washington, D. C., May 29, 1872.

SIR: I have, at your verbal request, examined certain questions which have been brought to your notice affecting your obligation under the laws of Congress to pay over to the Choctaw Nation certain bonds for the delivery of which claim is made upon you.

I find that no objections to such delivery are made, except such as can be gathered from the various treaties made with the Choctaw Nation and the action taken by Congress upon the claim which has been presented.

I will briefly recite the substantial points of the treaties which are relied upon to sustain the claim, and indicate my views thereon; I see no occasion to go back further than to the treaty of 1820.

This treaty provides for an exchange of a small part of the land of the Choctaws, east of the Mississippi River, for a country beyond the said river, the purpose being that those Indians wishing to become civilized and to be made citizens should remain, and that those who will not work, but prefer to live by hunting, should go to the new country west of the river.

Article I of this treaty cedes a part of the Choctaw lands to the United States, defining the same by bounds.

Article II states that in consideration of said cession by the Choctaw Nation, and in part satisfaction therefor, a certain tract west of the Mississippi River, defined by bounds, is ceded by the United States to the Choctaws.

The other articles of this treaty are beneficial to the Indians, engaging to subsist those who remove over the river until they arrive at their new home, and that a part of the land ceded to the United States shall be sold to create a school fund for the benefit of the Indians on both sides of the river, and making other provisions for the comfort and necessities of the Indians.

From the subsequent history of the relations between the United States and the Choctaw Nation, I infer that this treaty, by its various provisions, gave full consideration for the cession to the United States.

The treaty of 1825 retroceded to the United States a part of the lands granted to the Choctaws west of the Mississippi River by the

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treaty of 1820, and in consideration therefor the United States agreed to pay to the Choctaw Nation $6,000 annually, forever.

By the treaty of 1830, the Choctaw Nation, in consideration of the several articles thereof, cede to the United States the entire country they own and possess east of the Mississippi River, and agree to remove beyond the river as soon as practicable.

An examination of the various articles of this treaty will show that many of them contain a consideration for this cession highly valuable in its nature.

In Article IV self-government is secured to the Choctaw Nation.

In Article V the United States agree to protect the Choctaw Nation from domestic strife and foreign enemies.

In Article XIV it is provided that each Choctaw head of a family desiring to remain and become a citizen of the United States shall, upon notice, become entitled to a reservation of one section of 640 acres; to one-half section for each unmarried child over ten years of age living with such head of a family; and to one-quarter section for every child under ten years of age.

This is the reservation clause which has, I believe, been sometimes considered as the foundation of the present claim.

In Article XV certain specific grants of reservations and annuities are made to chiefs.

In Article XVI the United States agree to be at expense of removing and subsisting the Indians to their country west of the river.

In Article XVII former annuities are secured and further annuities are provided.

In Article XVIII there is a provision for the survey of the ceded Choctaw lands, and also this provision: "And for the payment of the several amounts secured in this treaty, the lands hereby ceded are to remain a fund pledged to that purpose until the debt shall be provided for and arranged."

I can discover no evidence that full provision has not been made for the payment indicated in the foregoing quoted passage, nor do I understand that any claim is set up under that clause.

If there is no such claim it would seem that the lands are free in the possession of the Government and relieved of all incumbrance under the pledge.

In Article XIX certain specific reservations are admitted and confirmed.

Article XX contains important stipulations for the benefit of the Choctaw Nation, to be performed by the United States.

The treaty of 1830 appears to me, therefore, to provide a consideration understood and accepted to be ample, which was certainly valuable in character, for the cession by the Choctaw Nation of "the entire country they own and possess east of the Mississippi River."

In 1855 a new treaty was made with the Choctaws and Chickasaws, from the preamble of which it would seem two objects were had in view:

1. To settle dissensions and controversies between the two tribes of Indians.

2. To originate what is termed the "net proceeds" claim of the Choctaw Nation.

As I have already said, the treaty of 1830 gave a full consideration for what it received from the Indians, consisting of certain specific things to be done by the United States, which, so far as anything to the contrary appears, were all performed.

That treaty, as I read it, by no language or implication gives coun-

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tenance to the idea that the United States, after giving the Choctaws a vast country west of the Mississippi River, for that given up by them east, after paying all the expenses of the removal of those who migrated and their subsistance on the journey; after giving all the stipulated reservations to those who chose to remain on their old lands; after making what looks like very liberal provision for personal annuities, for schools and various other necessities and conveniences of the tribe, still further agreed to hold the lands in the State of Mississippi ceded by them for these various considerations, in trust, as it were, and to pay over to them the "net proceeds" which might accrue from the sale of these lands.

The United States, by the treaty of 1855, do not assent to the "net proceeds" claim thus set up, as arising under the treaty of 1830; but it is agreed by the XIth Article of the treaty of 1855 that the questions be submitted for adjudication to the Senate of the United States:

1. Whether the Choctaws are entitled to, or shall be allowed the proceeds of the sale of the lands ceded by them by the treaty of 1830, in order to a final settlement; or,

2. Whether they shall be allowed a gross sum in further and full satisfaction of all their claims against the United States, national and individual, and, if so, how much. Under this article of the treaty, the Senate, on March 9, 1859, adopted the following preamble and resolutions:

Whereas the XIth Article of the treaty of 1855 provides] that the following questions be submitted for decision to the Senate, first, (quoting the words of the article:)

Resolved, That the Choctaws be allowed the proceeds of the sale of such lands as have been sold by the United States on the 1st day of January last, (1859,) deducting therefrom the costs of their survey and sale, and all proper expenditures and payments under said treaty, excluding the reservation allowed and secured, and estimating the scrip issued in lieu of reservation at the rate of $1.25 per acre; and further, that they be also allowed 12½ cents per acre for the residue of said lands.

Resolved, That the Secretary of the Interior cause an account to be stated with the Choctaws, showing what amount is due them according to the above principles of settlement, and report the same to Congress.

By this the Senate resolved that the Choctaws be allowed the net proceeds of the land ceded by the treaty of 1830, but did not make an award of the amount of those proceeds. They resolved, however, that the Secretary of the Interior cause an account to be stated with the Choctaws, showing what amount is due according to the award, and report the same to Congress.

On May 10, 1860, the Secretary of the Interior made his report which, in the House, was laid on the table and ordered to be printed.

In the Senate, the matter was referred to the Committee on Indian Affairs; the chairman of which, on the 19th of June, 1860, made a report in relation thereto, to accompany Senate bill 515, which was read twice and ordered to be printed.

Nothing else was done in either branch of Congress toward carrying out the resolve of the Senate of March 9, 1859.

By the report of the Senate Committee on Indian Affairs it appears that they came to the conclusion that the Choctaws were entitled to $2,332,560.85 as the net proceeds, and bill 515, accompanying the report, provided for the appropriation and disposition of the amount in accordance with the treaty of 1855.

The XIIth and XIIIth Articles of this treaty detail precisely what disposition is to be made of the money found due the Choctaws by the resolve of 1859.

1. The net proceeds shall be received in full satisfaction of all claims

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against the United States, national and individual; and the Choctaws shall thereupon become liable and bound to pay all individual claims as shall be adjudged by the tribe to be just; the settlement and payment to be made with advice and under the direction of the United States agent, and so much of the fund awarded by the Senate as shall be necessary to pay the just liabilities of the tribe shall, on their requisition, be paid.

2. The balance of the amount allowed to the Choctaws under the XIIth Article of the treaty shall be held in trust by the United States, yielding an interest of not less than 5 per cent., &c.

The legislation of 1861, appropriating $250,000 in money and $250,000 in bonds, and any further legislation looking to the payment of the sum found by the Committee on Indian Affairs in 1860 to be due to the Choctaws, is manifestly not in accordance with the treaty of 1855; for, first, nothing can be paid by Congress until the individual claims, which the Choctaws, by the treaty, assumed to pay, shall be adjudicated by the proper authorities of the tribe, and then only to the amount of such adjudication; and, second, the balance can, under the treaty, never be paid, but must be held in trust by the United States, the interest only being payable to the Indians.

No claims have ever been adjudicated by the tribe.

The impression made upon me by this review is, that the appropriation of 1861 was not sanctioned by the terms of the treaty, and that it was made either in forgetfulness of the terms of the treaty, as a payment in advance of any adjudication of individual claims by the tribe, or as a pure gratuity.

It also seems to me that no further appropriation can be wisely made except upon the basis of the Senate bill 515, reported by Mr. Sebastian, before referred to, or after a careful review of the whole subject.

I am, very respectfully,

E. C. BANFIELD,
Solicitor of the Treasury.

Hon. GEORGE S. BOUTWELL,
Secretary of the Treasury.

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